

**Sustainability Management in  
Clean Development Mechanism (CDM) Project Activities**

**D I S S E R T A T I O N**

Vorgelegt von  
Dipl.-Kffr. Felicia Müller-Pelzer  
05.09.1979, Bonn

Von der Fakultät VII – Wirtschaft und Management  
der Technischen Universität Berlin  
zur Erlangung des akademischen Grades  
Doktor der Wirtschaftswissenschaft  
(Dr. rer. oec.)

genehmigte Dissertation

Promotionsausschuss:

Vorsitzender: Prof. Dr. Axel Hunscha  
Berichter: Prof. Dr. Georg Meran  
Berichterin: Prof. Dr. Claudia Kemfert  
Drittgutachter: Prof. Dr. Stephen Wernet

Tag der wissenschaftlichen Aussprache: 10.11.2008

Berlin 2009

D83

## Acknowledgements

My special thanks are due to my two supervisors Prof. Dr. Claudia Kemfert and Prof. Dr. Georg Meran, as well as to my third reader, Prof. Stephen Wernet, for their help, advice and guidance during my PhD studies.

I sincerely appreciate Dr. Axel Michaelowa, Dr. André Martinuzzi, Dr. Wolfgang Meyer, Prof. Dr. Reinhard Stockmann, Prof. Dr. Wolfgang Laufner and Prof. Carolyn Egri for their scientific feedback and support.

I am very much obliged to my former superiors and colleagues at the UNFCCC Christine Zumkeller, Roberto Acosta, Maria Netto, Kai-Uwe Schmidt, Bilal Anwar, Kay Mercé and Si Yao Wang for providing me with specific insights and/or helping me to get into contact with key informants.

For their support in getting the case studies in Peru underway and for their feedback during the follow-up process, I sincerely thank Maria Paz Cigarán, Jorge Álvarez, Julia Justo and Tania Zamora. Furthermore, I thank all case study participants and interviewees for their input and support.

I thank Dr. Ines Omann, Niels Anger, Johannes Kissel, Karla Solís García, Christian Herzig, Ivo Besselink, Marianne Keudel and Michael Schlup for the exchange of ideas, the hints and/or the feedback on my drafts.

For acting as interpreters, I thank Yuki Itakura and Neli Iltcheva.

I further thank Dr. Helga Esselborn for her writing consultancy as well as Brie Casazza and Isabel Seidel for their help in editing.

A special thanks goes to my parents for their constant support and encouragement during the course of my PhD studies.

## Erklärung (Declaration)

Hiermit erkläre ich, dass ich die vorliegende Arbeit selbständig und ohne Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Alle Stellen, die wörtlich oder sinngemäß aus veröffentlichten und nicht veröffentlichten Schriften entnommen wurden, sind als solche kenntlich gemacht. Die Arbeit ist in gleicher oder ähnlicher Form oder auszugsweise im Rahmen einer anderen Prüfung noch nicht vorgelegt worden.

Berlin, den 10. März 2008

.....

## Abstract

The present PhD thesis is a study of “Sustainability Management in Clean Development Mechanism (CDM) Project Activities”. The study focuses on the research question of which approach would be suitable to demonstrate the contribution to sustainable development of a CDM project activity. This question is examined from the perspective of both the project developers and the Designated National Authorities (DNAs). The literature research done for this PhD thesis shows that the topics of sustainability and sustainable development have been largely addressed by different scientific disciplines and that a broad range of management and evaluation approaches has been developed. Yet, there is a considerable lack of transparent information about the contribution to sustainable development of most CDM project activities. Although tools have been created to demonstrate the contribution of a project activity, they are not largely applied. The reason for this deficiency is the *DNA dilemma*: if they set strict selection criteria, they run the risk of deterring investors and thereby of obstructing the access to decisive financial sources. On the contrary, if they set lax or no criteria, they risk that the project activities do not contribute to sustainable development or that they even have negative impacts. To overcome this, the author developed an approach, namely the *Sustainability Management Approach* (SMA), which considers both management needs of the CDM project developers and the evaluation needs of the DNAs. Three case studies in Peru revealed that project developers can apply the SMA by themselves to a great extent. In addition, a worldwide survey among the DNAs demonstrated that there is a broad acceptance for the SMA because it delivers the basis information needed for the assessment of project activities but at the same time stays manageable. Therefore, the author recommends using the SMA to further strengthen the evaluation process of CDM project activities with regard to their contribution to sustainable development.

## Zusammenfassung

Die vorliegende Dissertation untersucht „Nachhaltigkeitsmanagement in Clean Development Mechanism (CDM)-Projektaktivitäten“. Die Studie konzentriert sich auf die Forschungsfrage, welcher Ansatz geeignet wäre, den Beitrag einer CDM-Projektaktivität zur nachhaltigen Entwicklung darzulegen. Diese Fragestellung wird sowohl aus der Perspektive der Projektentwickler als auch der Designated National Authorities (DNAs) untersucht. Die Literaturrecherche zeigt, dass Nachhaltigkeit und nachhaltige Entwicklung von verschiedenen wissenschaftlichen Disziplinen ausgiebig behandelt worden sind und dass eine breite Palette an Management- und Evaluationsansätzen existiert. Dennoch gibt es einen starken Mangel an transparenter Information, was den Beitrag zur nachhaltigen Entwicklung der meisten CDM-Projektaktivitäten angeht. Zwar wurden Instrumente entwickelt, um den Beitrag einer Projektaktivität zu zeigen, jedoch finden sie keine breite Anwendung. Der Grund für diese Unzulänglichkeit ist das *DNA-Dilemma*: Wenn sie strikte Auswahlkriterien festlegen, laufen sie Gefahr, Investoren abzuschrecken und sich damit den Zugang zu entscheidenden Finanzquellen zu verbauen. Legen sie hingegen weiche bzw. keine Kriterien fest, riskieren sie, dass die Projektaktivitäten keinen Beitrag zur nachhaltigen Entwicklung erbringen bzw. dass sie sich sogar negativ auswirken. Um dieses zu überwinden, entwickelte die Autorin einen Ansatz, den *Sustainability Management Approach* (SMA), der sowohl Managementanforderungen der Projektentwickler sowie Evaluationsanforderungen der DNAs berücksichtigt. Drei Fallstudien in Peru ergaben, dass Pro-

jektentwickler den SMA größtenteils selbständig anwenden konnten. Außerdem zeigte eine weltweite Umfrage unter den DNAs eine breite Zustimmung zum SMA auf, da er die grundlegenden Informationen zur Beurteilung von Projektaktivitäten liefert, aber dabei handhabbar bleibt. Deshalb empfiehlt die Autorin, den SMA zu verwenden, um den Evaluationsprozess für CDM-Projektaktivitäten hinsichtlich ihres Beitrags zur nachhaltigen Entwicklung zu weiter stärken.

# Table of contents

Chapter I – Introduction .....	11
1. Historic background .....	11
1.1. The creation of the CDM.....	12
1.2. CDM evaluation practices .....	13
1.2.1. Additional emission reductions .....	13
1.2.2. Contribution to sustainable development .....	16
2. The DNA dilemma .....	18
3. Way out of the DNA dilemma.....	19
4. Overview of the study.....	20
Chapter II – Sustainable development.....	21
1. History and conceptual background .....	21
1.1. Development of the concept .....	21
1.1.1. Origin.....	21
1.1.2. Sustainable development and sustainable growth .....	21
1.1.3. Durability versus ethic-normative interpretation.....	22
1.1.4. Intergenerational and intragenerational equity .....	22
1.1.5. Brundtland definition.....	22
1.1.6. From Rio to Johannesburg.....	23
1.1.7. The concept under the Kyoto Protocol.....	23
1.2. The three dimensions of sustainable development.....	24
1.2.1. Economic dimension .....	25
1.2.2. Ecological dimension .....	29
1.2.3. Social dimension.....	30
1.3. Integration of sustainability dimensions.....	31
1.3.1. Strong versus weak sustainability.....	31
1.3.2. Strong versus weak comparability.....	31
1.3.3. Strong versus weak commensurability .....	32
1.3.4. Optimization versus satisficing .....	32
1.3.5. Consideration of trade offs .....	33
2. Management perspective .....	36
2.1. Related streams of management science .....	37
2.1.1. Strategic views of the firm.....	37
2.1.2. Quality management.....	38
2.2. Sustainability management: stages and strategies.....	39
2.2.1. Company-oriented sustainability.....	39
2.2.2. Phases of organizational development .....	40
2.2.3. Corporate sustainability strategies.....	40
2.3. Sustainability management: concepts and instruments .....	41
2.3.1. Corporate Social Responsibility .....	41
2.3.2. Triple bottom line .....	42
2.3.3. Sustainability audits and standards.....	43
2.3.4. Sustainability balanced scorecard.....	46
3. Sustainability evaluation.....	47
3.1. History .....	47
3.1.1. Streams of theory.....	47
3.2. Core elements of sustainability evaluation.....	49
3.2.1. Holistic approach.....	49
3.2.2. Time scales .....	49
3.2.3. Spatial scales.....	49
3.2.4. System dynamics, risks and uncertainties .....	50

3.2.5.	Values .....	50
3.2.6.	Participation.....	50
3.2.7.	Process .....	51
3.3.	Types of evaluation .....	51
3.3.1.	Moment of evaluation.....	51
3.3.2.	Functions of evaluation .....	52
3.3.3.	Project or programme stages .....	52
3.4.	Making concepts explicit.....	52
3.4.1.	Change model and action model .....	53
3.4.2.	Logical framework analyses .....	53
3.4.3.	Reconstructing the underlying theory.....	55
3.4.4.	Immanent versus exmanent frameworks .....	57
3.5.	Evaluation fatigue.....	57
4.	Sustainable development in climate policy .....	57
4.1.	Formal preconditions for assessment .....	58
4.2.	Proposals for assessment .....	58
4.3.	Synergies and integration .....	59
4.4.	Link to equity discussion.....	60
4.5.	Lack of sustainable development impulses? .....	61
4.6.	Main approaches implemented.....	62
4.6.1.	Selection by project type .....	62
4.6.2.	Guidelines and recommendations.....	63
4.6.3.	Criteria and requirements .....	63
5.	Proposal .....	65
5.1.	Minimal standards and self-set goals.....	67
5.2.	Conceptual framework of this study.....	68
5.2.1.	Ten sustainable development guidelines .....	68
5.2.2.	The Sustainability Management Approach .....	72
6.	Conclusion .....	79
	Chapter III – Research methods .....	80
1.	Selection of methods .....	80
1.1.	Literature review.....	80
1.2.	Part I: Case studies .....	81
1.3.	Part II: Survey.....	82
2.	Quality of the research design .....	82
2.1.	Objectivity .....	82
2.2.	Validity .....	82
2.2.1.	Construct validity .....	82
2.2.2.	Internal validity.....	83
2.2.3.	External validity .....	84
2.3.	Reliability .....	84
3.	Variables .....	85
4.	Sample .....	87
4.1.1.	Case studies .....	87
4.1.2.	Survey .....	88
5.	Data collection methods and procedures .....	88
5.1.	Data sources.....	89
5.1.1.	Primary data sources.....	89
5.1.2.	Secondary data sources.....	90
5.2.	Data collection procedures .....	91
5.2.1.	Case studies .....	91
5.2.2.	Survey .....	92

6.	Data analysis procedures .....	93
6.1.	Case studies .....	94
6.1.1.	Content analysis.....	94
6.1.2.	Comparative analysis.....	94
6.2.	Survey .....	95
6.2.1.	Frequency analysis .....	95
6.2.2.	Content analysis.....	95
6.2.3.	Analysis of non-respondents .....	95
7.	Limitations of the study .....	95
7.1.1.	Case studies .....	95
7.1.2.	Survey .....	95
	Chapter IV – Peruvian context .....	97
1.	Conditions for CDM project activities in Peru.....	97
1.1.	Country background .....	97
1.1.1.	Natural resources and main economic sectors.....	97
1.1.2.	Over-exploitation.....	98
1.1.3.	Climate change .....	98
1.1.4.	Population.....	99
1.1.5.	Concentration in urban areas .....	99
1.1.6.	Poverty.....	100
1.1.7.	Education .....	100
1.1.8.	General economic conditions .....	100
1.1.9.	Political background.....	101
1.2.	Relevant legislation .....	101
1.2.1.	Agenda 21 .....	102
1.2.2.	Constitution .....	102
1.2.3.	General Environmental Law.....	102
1.2.4.	National Environmental Policy .....	103
1.2.5.	Framework of Environmental Management.....	103
1.2.6.	National Agreement.....	104
1.2.7.	National Environmental Agenda .....	104
1.2.8.	National Decentralization Plan.....	104
1.2.9.	National Strategy on Climate Change .....	104
1.2.10.	National Strategy of the CDM.....	105
1.2.11.	Conclusion .....	105
1.3.	CDM potential in Peru.....	106
2.	The position of the Peruvian DNA .....	107
2.1.1.	Approval criteria.....	107
2.1.2.	Follow-up of CDM project activities.....	109
2.1.3.	CONAM’s definition of sustainable development .....	110
2.1.4.	Measuring the contribution to sustainable development .....	110
3.	Conclusion .....	111
	Chapter V – Presentation of cases .....	112
1.	CASE A .....	112
1.1.	Preparatory analysis.....	112
1.2.	Initial interview.....	115
1.2.1.	Perception of the CDM.....	115
1.2.2.	National legislation.....	115
1.2.3.	DNA criteria for sustainable development.....	115
1.2.4.	Definition of sustainable development.....	116
1.2.5.	The company’s goal system and planning.....	116
1.2.6.	Sustainability concepts and management systems .....	117

1.2.7.	Participation.....	117
1.2.8.	Learning organization.....	117
1.2.9.	Potential reactions.....	118
1.3.	Application of the SMA .....	118
1.3.1.	First focused discussion.....	118
1.3.2.	Second focused discussion .....	121
1.3.3.	Final feedback of the project developer.....	126
2.	Case B.....	127
2.1.	Preparatory analysis.....	127
2.2.	Initial interview.....	127
2.2.1.	Perception of the CDM.....	127
2.2.2.	National legislation.....	127
2.2.3.	DNA criteria for sustainable development .....	127
2.2.4.	Definition of sustainable development .....	128
2.2.5.	The company's goal system and planning.....	128
2.2.6.	Sustainability concepts and management systems .....	128
2.2.7.	Participation.....	128
2.2.8.	Learning organization.....	129
2.2.9.	Potential reactions.....	129
2.3.	Application of the SMA .....	129
2.3.1.	First focused discussion.....	129
2.3.2.	Second focused discussion .....	133
2.3.3.	Final feedback of the project developer.....	136
3.	Case C.....	136
3.1.	Preparatory analysis.....	136
3.2.	Initial interview.....	137
3.2.1.	Perception of the CDM.....	137
3.2.2.	National legislation.....	138
3.2.3.	DNA criteria for sustainable development .....	138
3.2.4.	Definition of sustainable development .....	138
3.2.5.	The company's goal system and planning.....	139
3.2.6.	Sustainability concepts and management systems .....	139
3.2.7.	Participation.....	139
3.2.8.	Learning organization.....	140
3.2.9.	Potential reactions.....	140
3.3.	Application of the SMA .....	140
3.3.1.	First focused discussion.....	140
3.3.2.	Second focused discussion .....	146
3.3.3.	Final feedback of the project developer.....	149
Chapter VI – Analysis of case study data.....		150
1.	Before the use of the SMA .....	150
1.1.	Information provided by the PDDs .....	150
1.2.	Company types .....	150
1.2.1.	Formal characteristics.....	150
1.2.2.	Knowledge and experience.....	151
1.2.3.	Perception of goals .....	152
1.2.4.	Operationalization .....	154
1.2.5.	Existing concepts.....	155
1.2.6.	Team for sustainable development.....	156
1.2.7.	Stakeholder participation.....	156
1.2.8.	Potential outcomes.....	157
1.2.9.	Typology.....	158

2.	The elements of the SMA .....	159
2.1.	Policy analysis .....	159
2.1.1.	Enrichment and systematization .....	159
2.1.2.	Applicability .....	159
2.2.	Stakeholder analysis .....	161
2.2.1.	Enrichment and systematization .....	161
2.2.2.	Applicability .....	161
2.3.	Definition of resources and inputs .....	161
2.3.1.	Enrichment and systematization .....	161
2.3.2.	Applicability .....	162
2.4.	Definition of a goal hierarchy .....	163
2.4.1.	Enrichment and systematization .....	163
2.4.2.	Applicability .....	163
2.5.	Definition of activities .....	164
2.5.1.	Enrichment and systematization .....	164
2.5.2.	Applicability .....	164
2.6.	Definition of indicators .....	165
2.6.1.	Enrichment and systematization .....	165
2.6.2.	Applicability .....	165
2.7.	Discussion of underlying assumptions .....	166
2.7.1.	Enrichment and systematization .....	166
2.7.2.	Applicability .....	166
2.8.	Summary of results from implementation .....	167
3.	Following sustainable development guidelines .....	168
3.1.	Holistic perspective .....	168
3.1.1.	Interdisciplinary .....	168
3.1.2.	Three dimensions .....	168
3.2.	Embeddedness and institutionalization .....	170
3.3.	Scales .....	170
3.4.	Participation .....	171
3.5.	Transparency .....	172
3.5.1.	Underlying theory .....	172
3.5.2.	Accountability .....	172
3.6.	Operationalization .....	173
3.7.	Continuity .....	174
3.8.	Organizational learning .....	174
3.9.	Proactive attitude .....	175
3.10.	Compensation .....	175
4.	Summary .....	177
	Chapter VII – Survey .....	179
1.	Survey data .....	179
2.	Analysis .....	181
2.1.	Availability of information .....	181
2.2.	Experience with the CDM .....	182
2.3.	Current practice .....	182
2.4.	Experience with the elements of the SMA .....	186
2.5.	Current use of the elements of the SMA .....	187
2.6.	Usefulness of the elements of the SMA .....	188
2.6.1.	Quantitative results .....	188
2.6.2.	Qualitative results .....	191
2.7.	Overall judgment .....	193
2.7.1.	Quantitative results .....	193

2.7.2.	Qualitative results .....	194
2.7.3.	Experience and judgment .....	195
3.	Non-response .....	196
4.	Limits of the survey .....	196
4.1.	Over-reporting .....	196
4.2.	Over-acquiescence .....	196
4.3.	Fuzzy data .....	197
4.4.	Differentiation .....	197
5.	General Conclusions .....	197
Chapter VIII – Recommendations and conclusions .....		199
1.	Research results .....	199
1.1.	Review of literature .....	199
1.2.	Case studies .....	200
1.3.	Survey .....	201
2.	Outlook .....	202
Figures .....		205
Tables.....		206
Abbreviations.....		207

# Chapter I – Introduction

This chapter introduces the research topic and its scope. For this reason, the background of the Clean Development Mechanism (CDM) will be described and analyzed. Based on this, the purpose as well as the rationale and importance of this study will be outlined. The chapter will conclude with the research question which structures the subsequent analytic process.<sup>1</sup>

## 1. Historic background

The United Nations Framework Convention of Climate Change (UNFCCC) was established to stabilize greenhouse gas (GHG) concentration with the aim to prevent dangerous anthropogenic interference with the climate system. This should be achieved to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.<sup>2</sup> However, the implementation encountered difficulties: the Convention did not set binding targets and the Parties did not make the needed arrangements for implementation. In pursuit of the ultimate objective of the Convention and guided by Article 3 of the Convention, the Parties established the Kyoto Protocol. Industrial countries<sup>3</sup> committed themselves to jointly reducing their GHG emissions from 2008 to 2012 by 5.2% below the 1990 level. Quantified emission limitation and reduction commitments are differentiated by country.

The Kyoto Protocol obliges ratifying Annex I countries to jointly reduce emissions by 5.2% from 2008 to 2012, compared to the 1990 levels. The Intergovernmental Panel on Climate Change (IPCC), however, considered this commitment insufficient (IPCC, 2001), as reinforced in its Fourth Assessment Report (IPCC, 2007)<sup>4</sup>.

Several proposals were discussed to involve the states not being part of the Kyoto Protocol. The *Brazilian Proposal* consisted in the Clean Development Fund (CDF), a compliance mechanism: Parties not complying with their assigned emissions commitments would have been penalized. These sanction payments (10 US\$ tCO<sub>2</sub>eq.) accumulated should flow to developing countries in order to finance sustainable development. This proposal was, however, not adopted, as the US delegation insisted on an incentive-based mechanism which was the basis for the emission trading and the Clean Development Mechanism (CDM).

In the course of the discussion around the topic of sustainable development, the developing countries (articulated by the intergovernmental organization of developing states in the United Nations, the Group of 77 and China) maintained a clear position:

---

<sup>1</sup> Acknowledgement: This chapter is partly based on Müller-Pelzer (2008).

<sup>2</sup> See UNFCCC (1992), Article 2: “The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”

<sup>3</sup> Including some economies in transition (EITs).

<sup>4</sup> “The Kyoto Protocol is currently constrained by the modest emission limits and will have a limited effect on atmospheric concentrations. It would be more effective if the first commitment period were to be followed up by measures to achieve deeper reductions and the implementation of policy instruments covering a higher share of global emissions (*high agreement, much evidence*).” (IPCC, 2007)

“The objective of sustainable development for developing countries in the CDM can only be defined by these countries at the national level.” (G77 and China, 1999)

This firm position was mainly motivated by the experience with the practices in development aid, especially those of the Global Environment Facility (GEF). Due to the constitution and the voting procedure of the board, the developing countries feel taken in and deprived of power. Therefore, it was imperative for the developing countries to limit industrial countries’ influence on the investments for sustainable development in the host countries.

Another attempt to define generally valid sustainability criteria was made in Marrakesh. The proposal was included in a draft decision text but was not adopted, as no consensus could be achieved, as the developing countries firmly refused a top-down approach. However, the contribution to sustainable development was explicitly included in the framework of the CDM.

### 1.1. The creation of the CDM

The CDM was established within the Kyoto Protocol together with two other Kyoto mechanisms, the Joint Implementation (JI) and the Emission Trading (ET). The CDM was created to assist non-Annex I Parties<sup>5</sup> in achieving sustainable development and contributing to the ultimate objective of the Convention, while assisting ratifying Annex I Parties in achieving compliance with their binding targets under the Kyoto Protocol. This mechanism thus offers ratifying Annex I Parties the opportunity to reduce GHG emissions in other countries where the reduction unit is cheaper.<sup>6</sup>

During the UNFCCC Conference of the Parties in Marrakesh in 2001, modalities and procedures for the CDM were developed. Under the CDM, ratifying Annex I Parties can implement projects that either reduce emissions in non-Annex I Parties or absorb carbon through afforestation or reforestation activities. In return, ratifying Annex I Parties receive CERs while the project activities assist the host Parties in achieving sustainable development and contributing to the ultimate objective of the Convention. The supervisory body of the CDM is the Executive Board (EB)<sup>7</sup>.

Due to the fact that climate change is a global phenomenon, it does not matter where GHG emission reductions are achieved. As GHG abatement costs in non-Annex I countries are much lower than in Annex I countries, the CDM gives ratifying Annex I Parties the opportunity to achieve their abatement target at lower costs while enhancing sustainable development in non-Annex I Parties.

As such, the CDM pursues three main goals, which are the product of a long-term consultation process between the Parties of the Convention: first, to assist non-Annex I Parties in achieving sustainable development; second, to support them in contributing to the ultimate objective of the Convention; and third, to help Annex I Parties in achieving compliance with their Kyoto targets. However, these goals are not operational, they require interpretation. Two elements can clearly be distinguished: the contribution to sustainable development and the achievement of emission reductions under the Kyoto protocol. These are the two main aspects which are examined when single CDM project activities are considered.

---

<sup>5</sup> I.e. developing countries.

<sup>6</sup> The Kyoto Protocol (1997) establishes in its Article 12.2: “The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.”

<sup>7</sup> See [http://unfccc.int/kyoto\\_protocol/mechanisms/items/2998.php](http://unfccc.int/kyoto_protocol/mechanisms/items/2998.php) (2007-08-26).

More difficult to grasp is the way how non-Annex I countries should contribute to the ultimate objective of the Convention. This element links the CDM to the broader context beyond the Kyoto protocol.

In addition to this leeway for interpretation, trade-offs between these three goals can be identified: For instance, a project activity strongly reducing emissions may have more negative impacts than positive ones on sustainable development.

The Marrakesh Accords (UNFCCC, 2001b) do not provide detailed methodologies for CDM project activities as the Parties opted for a bottom-up approach. A top-down approach was excluded. The host country was declared sovereign to decide whether a CDM project activity contributed to the sustainable development of this country (subsidiary principle):

Affirming that it is the host Party's prerogative to confirm whether a clean development mechanism project activity assists it in achieving sustainable development, [...] (UNFCCC, 2001a)

The governmental body to carry out this task is the host country's Designated National Authority (DNA).

## 1.2. CDM evaluation practices

As a matter of fact, the achievement of the overall 5.2% reduction target of the Kyoto Protocol is dependent on the quality of the certified emission reductions (CERs), which are the carbon credits accruing from the CDM: These credits are used by ratifying Annex I Parties to contribute to the compliance with part of their quantified emission limitation and reduction commitments under Article 3. Therefore, the climate experts specified that CERs had to be "additional" to what would have been achieved in a business of usual scenario (UNFCCC, 1997). In a bottom-up approach, detailed methodologies have been developed by project developers and climate experts to calculate the CERs. A detailed assessment procedure has been created to support this process. However, no corresponding framework has been established for the sustainable development component of CDM project activities.<sup>8</sup>

In the following section, it will be demonstrated that there is a fundamental imbalance between the evaluation practices for emission reductions and for sustainable development: the GHG emission reductions are to be monitored, but not the contribution to sustainable development (going beyond the global benefit from reduced GHG emissions) in non-Annex I countries.

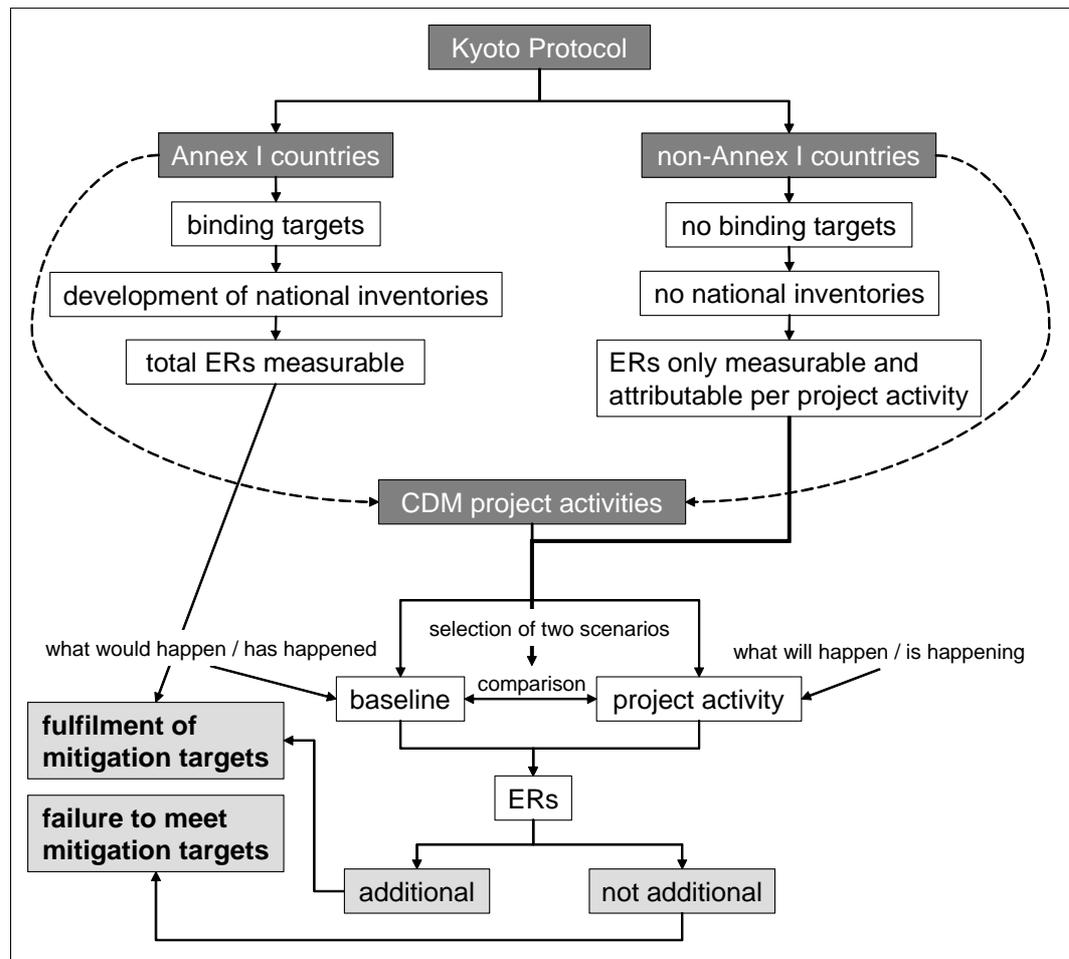
A detailed examination of the evaluation practices is necessary to recognize the current lack of assessment and to understand why an approach is needed to address the contribution to sustainable development.

### 1.2.1. Additional emission reductions

For a long time research has broadly dealt with the calculation of emission reductions. But why is the interest in emission reductions so strong? First of all, the interest is great because emission reductions translate into monetary benefits. Therefore, it has to be shown which project activity has led to which amount of emission reductions. Furthermore, a precise calculation of emission reductions is needed to guarantee the integrity of the Kyoto Protocol (see Figure 1), as CERs can be used to meet ratifying Annex I Kyoto commitments. Ratifying Annex I countries are required to develop national inventories for monitoring the total

---

<sup>8</sup> Discussions among the Parties about this issue would most probably have been lengthy (see COP6 discussions).



**Figure 1:** Additionality of emission reductions to guarantee the integrity of the Kyoto Protocol

emission reductions (ERs), which is why changes in ratifying Annex I countries can be tracked. This is not the case for non-Annex I countries.<sup>9</sup> Therefore, achievements in non-Annex I countries are only measurable at project level.

#### 1.2.1.1. Baseline

To measure the emission reductions, a baseline (i.e. the reference case) is compared to the project case. The baseline setting has far-reaching consequences for the measurement of the emission reductions. If the baseline is not set conservatively, excess CERs are generated and the Kyoto abatement targets remain unmet.<sup>10</sup> Subsequently, the number of carbon certificates is not equivalent to the achieved emission reductions, which thus stay behind. A high-quality baseline is therefore the prerequisite for maintaining the integrity of the Kyoto Protocol. However, the more refined a new baseline methodology, the more costly its development and initial application. Later, this effect can be reduced or even compensated by learning effects and reapplication.

<sup>9</sup> Some non-Annex I countries voluntarily develop national inventories, e.g. if funds are provided by Annex I countries.

<sup>10</sup> The baseline should not by default represent the historical situation such as in a Before-After-Comparison. A baseline should model the situation likely to take place (to have taken place) if the project activity is not (had not been) accepted under the CDM. This scenario can of course be equivalent to the historical situation if no change is expected. As the baseline scenario is hypothetical, it implies a certain percentage of uncertainty.

### 1.2.1.2. Additionality

If the resulting emission reductions are additional (i.e. would not have happened otherwise), the integrity of the Kyoto Protocol is ensured. If they are not additional but still generate credits for the emission trading, the quantity of credits on the market is inflated, which could finally lead to a failure to meet the mitigation targets of the Kyoto Protocol. The additionality concept is one of the most disputed topics of the assessment. It was laid down in the Kyoto Protocol and the Marrakesh Accords, but its interpretation was left open. The additionality concept is shaped through the definition of methodologies and demonstrated by certain procedures.<sup>11</sup> Although great effort has been made to achieve reliable measurements of emission reductions, the accuracy will not be perfect in all cases. This is due to the fact that the baseline is a theoretical concept which is counterfactual and can never be proved. Hence, additionality can only be demonstrated, but not proved.

This shows that not only sustainable development is a concept requiring interpretation. The measurement of the emission reductions also relies on *fuzzy data* (e.g. the intentions of the project developers or the investment tests suggesting objectivity but also being based on assumptions).<sup>12</sup>

### 1.2.1.3. Current evaluation practices

The evaluation practices for additional emission reductions have achieved a certain level of transparency: All obligatory documentation has to be made available to the public on the CDM website (<http://cdm.unfccc.int>). Each project activity has to be accompanied by a PDD (Project Design Document). The public thereby has the opportunity to actively participate in the evolution of the CDM. Comments can be provided during the public input phases for new proposed methodologies and project activities. However, this opportunity is generally not taken advantage of, which is demonstrated by the ever-declining public inputs on methodologies.<sup>13</sup>

With the creation of baseline and monitoring methodologies, the first step towards making the emission reduction goal operational has been taken. The methodologies are developed in a bottom-up process by the project proponents. CDM proposals are then reviewed by the EB, the supervisory body of the CDM. The many

---

<sup>11</sup> At its 16th meeting, the EB published the “tool for the demonstration and assessment of additionality”, which is the consolidation of the additionality tests provided by the approved methodologies. During the COP10 in Buenos Aires in December 2004, the EB clarified that the use of the tool is not mandatory. However, the recent approval praxis of the EB indicates the tool as a minimal standard for additionality assessment in effect setting. Nevertheless, two fundamental interpretations are still competing against each other: The first interpretation is referred to as environmental additionality, which requires demonstrating that emission reduction would not be achieved without the proposed project activity. The second interpretation goes further, requiring additional emission reductions to be those which would not be achieved without the impact of the CDM. Thus, a project activity does not lead to additional emission reductions if it had happened anyway. The first interpretation implicitly assumes the baseline scenario be different from the one of the project activity; however, the second interpretation requires this assumption be sustained appropriately. A project activity that would also take place without being accepted under the CDM has to be considered as business-as-usual, thus not additional.

<sup>12</sup> This is also the case with regard to Annex I inventories or IPCC forecasts.

<sup>13</sup> As of June 2005, less than one comment per new proposed methodology was submitted on average: more than 20% of the new proposed methodologies did not generate any comments from the public, 30% of all comments were provided by the Öko-Institut and 17% by the Federation of Electric Power Companies. These results show that the involvement of the stakeholders is rather limited and unbalanced.

proposals gathered from the project developers also have to be continuously consolidated.

The project activity has to be validated by a Designated Operational Entity (DOE)<sup>14</sup> before registration can be requested. During the operation of the CDM project activity, the emission reductions have to be verified by another DOE different from the one who validated the project activity.<sup>15</sup>

Up to now, the evaluation practices for emission reductions show that great value is placed on accurate measurements, and that higher cost, time and research requirements are accepted.

## **1.2.2. Contribution to sustainable development**

In contrast to the emission reductions, the contribution to sustainable development is not subject to a generally applicable evaluation procedure. As the Kyoto Protocol requires a CDM project activity to contribute to sustainable development, many sets of criteria and evaluation approaches have been developed (see e.g. Markandya and Halsnaes, 2002; Begg et al., 2003; Brown and Corbera, 2003a; Sutter, 2003); however, so far they have not been largely applied.

### **1.2.2.1. Context-specificity**

The responsibility for assessing sustainability is in the hands of the host countries; they are sovereign. Requirements for sustainable development differ from country to country. Sustainability is a very comprehensive concept composed of diverse perspectives<sup>16</sup> which may be conflicting (Stockmann, 2004). As sustainable development should respond to the stakeholders' needs, the value generated by a project activity may only be estimated by the host country itself. A universal scheme for all countries and all project types to determine the contribution to sustainable development has therefore been rejected and an evaluation by internationally accredited entities is not pursued. Each country is free to choose its own way of dealing with the topic of sustainable development; neither proceedings nor quality standards are prescribed. However, this flexibility may lead to perverse incentives.

### **1.2.2.2. Current evaluation practices**

Regarding the contribution to sustainable development, transparency of the evaluation practices is not achieved. A list of the Designated National Authorities (DNAs) is available on the CDM website providing contact addresses and links to websites, if existent. But there is no website or document available providing an overview of the sustainable development requirements of the respective countries.<sup>17</sup> In the PDD, project developers have to provide a verbal explanation of the project activity's contribution to sustainable development, but sustainability aspects are only addressed by the DOEs, if included in the monitoring protocol. An external evaluation of the second goal is therefore hindered by the limited data availability and transparency.

---

<sup>14</sup> A Designated Operational Entity (DOE) is an institution accredited by the EB, which undertakes validation as well as verification and certification activities for CDM project activities.

<sup>15</sup> For small-scale CDM project activities, this task can be adopted by the same DOE which carried out the validation.

<sup>16</sup> See the "constructivist paradigm" in Chapter II.

<sup>17</sup> This is not mandated, but it would be very useful for increased transparency.

Some DNAs have published general guidelines and criteria, but few have published an operational set of criteria and indicators.<sup>18</sup> As sustainable development is considered one of the main benefits of the CDM for developing countries (DCs), aid organizations and ecological NGOs, such as the WWF<sup>19</sup>, call for high-quality certificates. The *CDM Gold Standard*<sup>20</sup> is such a quality label. It asks for a demanding investment and barrier test as well as detailed sustainability requirements, but is not largely applied.<sup>21</sup>

Figure 2 summarizes the imbalance of the evaluation practices with respect to the two CDM goals: emission reductions (ERs) and sustainable development (SD).

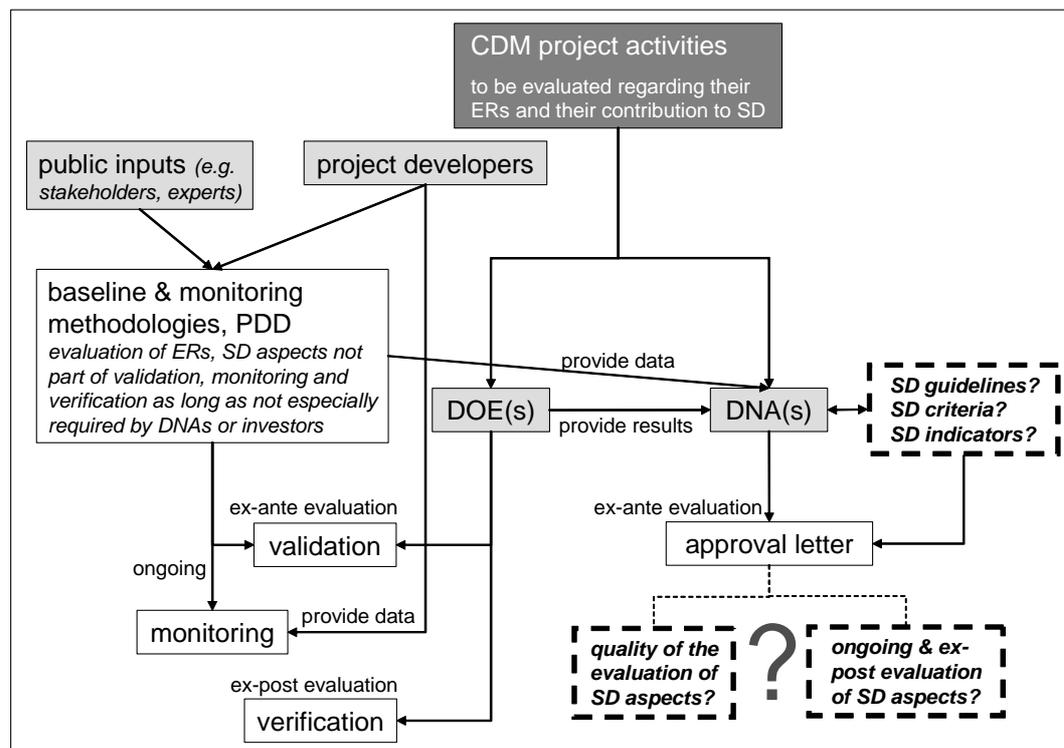


Figure 2 Evaluation design of the CDM

<sup>18</sup> 37 of the 80 DNAs interviewed between 11 January 2007 and 5 April 2007 apply an approach to demonstrate the contribution to sustainable development in the host country. Nevertheless, this number does not say anything about the quality of the approach. The impression gained from the description provided by the DNAs was that most of them use a set of criteria, some require only a verbal description of the contribution to sustainable development, but there are also a few (3) who use more sophisticated evaluation tools.

<sup>19</sup> See <http://www.panda.org/climate/goldstandard/> (2005-07-12).

<sup>20</sup> The original concept was pioneered by Helio International, promoted by SouthSouthNorth and used for developing the CDM Gold Standard in a cooperation of 36 NGOs. The CDM Gold Standard is an accreditation standard for project activities.

<sup>21</sup> This may also be due to the fact that the CDM Gold Standard is an NGO and not officially authorized by the Parties.

## 2. The DNA dilemma

But why is the contribution to sustainable development such an opaque topic? One reason lies in the competition for CDM project activities: The DNAs, who are responsible for assessing the contribution to sustainable development, find themselves in a dilemma<sup>22</sup> when establishing assessment procedures for CDM project activities: one option is to set strong criteria and thereby risk reducing the country's attractiveness for investors<sup>23</sup>. In the extreme case, if no CDM project activities are developed in a host country, there will also be no contribution to sustainable development from the CDM. Alternatively, the DNAs can define weak criteria or simply not specify any, but thereby risk to forgo the benefits related to sustainable development. To attract foreign capital to their country, the DNAs might even be tempted to reduce their sustainable development requirements more and more (called *race to the bottom* by Thorne and Raubenheimer, 2001). In case of unilateral CDM, local investors may be deterred by sustainable development criteria and the host country's participation in the CDM may thereby be limited.<sup>24</sup>

The task of the DNAs is to facilitate projects which provide technology transfer and contribute to the sustainable development of the host country. This implies that the DNAs have to assess the quality while ensuring an attractive project volume. As the volume aspect appears to be dominant, the quality objective regarding is jeopardized.

Due to these deficiencies, the sustainability goal is in danger, i.e. one of the main interests of the non-Annex I countries in the CDM is not adequately taken into consideration. As observed in the papers of the International Institute of Sustainable Development (IISD) on the *development dividend* (Cosbey et al., 2005; Cosbey et al., 2006), sustainable development seems to be treated as a secondary issue. Therefore, the IISD calls for common principles and guidelines for sustainable development under the CDM.

The purpose of the study is to deduce from theoretical considerations what kind of conceptual approach would be needed and feasible in order to overcome the DNA dilemma. To examine its adequacy to the field, the approach was applied in three case studies conducted with project developers. The research focuses on the practical applicability as well as on conceptual clarifications during the elaboration of the sustainability strategies. The case studies examine the business side of the research question. This is, however, not sufficient because the policy framework shapes the leeway for the behaviour of the companies. Therefore, a survey helped to analyze the applicability in different countries and the valuation of the approach by the DNAs, i.e. the policy side. A positive feedback from the business side and the policy side might indicate a possibility for consensus<sup>25</sup>.

---

<sup>22</sup> The word *dilemma* is used in this study to describe a situation where the DNAs are torn between two solutions which are both not satisfactory, as in both cases the DNAs miss their mission: This unattractive choice leads to a tactical inactivity. The notion *dilemma* is not used in the sense of the prisoner's dilemma in game theory. DNAs are in a dilemma if they take their task seriously. Under this assumption, not only their credibility is at risk. By setting wrong incentives, they could cause damage to their country.

<sup>23</sup> Investors can belong to Annex I or non-Annex countries, as the CDM can also be carried out unilaterally.

<sup>24</sup> Another motivation may be that host countries do not have an interest in demonstrable sustainability benefits, as this may be used as a bargaining chip for post-2012 regimes to make developing countries adopt their own targets.

<sup>25</sup> Such a deduction is based on the assumption that the DNAs represent the political position of the Parties to the Kyoto Protocol.

### 3. Way out of the DNA dilemma

As the Kyoto Protocol and the Marrakesh Accords emphasize the sovereignty of the Parties, an independent entity to assess the impact of CDM project activities on sustainable development will most likely not be created. The DNA dilemma shows that the DNAs are not necessarily sufficiently active in defending the interests of the stakeholders<sup>26</sup> due to competition for CDM project activities.

As there is a lack of assessment with regard to sustainable development, there is a risk of adverse selection of project activities and moral hazard. This leads to the conclusion that there is a need for an alternative approach, an approach which can be applied bottom-up by the project developers themselves while the DNAs define framing conditions to set incentives.

**The business side:** What sustainable development means in practice is highly context-specific and has to be determined for each case individually. It is therefore necessary to encourage companies to embed sustainable development into their strategic management. The companies can then decide in which way they are able to contribute best. Such a procedure would enhance context-specific conceptual clarification of sustainable development. If the awareness for sustainability is high among the interested public, sustainability management can even turn into a direct market advantage for committed companies, an incentive, and thereby prevent overregulation.

**The policy side:** To enable this development, adequate framing conditions have to be implemented by the DNAs to ensure that the stakeholders' needs are appropriately taken into account. Transparency is crucial for the success of the CDM, as it has to be understandable why and how a project activity contributes to sustainable development. An ex-ante assessment without further follow-up is not sufficient to ensure goal achievement. Therefore, the DNAs – at best jointly – should clarify procedures to be followed by the project developers to obtain the data needed for this purpose.

This study is conducted to propose a way out of the DNA dilemma bridging the gap between the business side and the policy side. If the Parties could decide on a common approach, a minimal quality of the CDM project activities could be ensured and thus inequities between Annex I and non-Annex I countries could be reduced. In other words, such a concerted approach, which could function as a standard process, could improve the quality of CDM project activities worldwide, bringing sustainable development back on the CDM agenda<sup>27</sup>. This could probably not abolish the DNA dilemma entirely, but alleviate it by striking a balance and sharing responsibilities with the project developers and the stakeholders.

These considerations led to the research question of this study with deepening questions concerning both the business side and the policy side:

---

<sup>26</sup> In the context of CDM project activities, stakeholders are defined as follows: “Stakeholders means the public, including individuals, groups or communities affected, or likely to be affected, by the project.” (UNFCCC, 2001b) In this study, a broader definition of stakeholders is adopted: A stakeholder is an individual or a group who can be affected by, interested in, be in a position to effect adoption or execution, have an expressed opinion on or ought to care about something (Mason and Mitroff, 1981).

<sup>27</sup> However, if governments do not want to limit the decision power of their DNAs at all, even an international standard process would not be feasible.

## Research question

Which approach would be suitable to assist DNAs in overcoming their dilemma?

- Business side: Is the selected approach<sup>28</sup> applicable in practice, i.e. does it assist project developers in elaborating their concepts and strategies?
- Policy side: Do the DNAs consider the selected approach worth applying?

In this study it will be analysed whether the SMA leads to new insights and helps project developers to formulate a sustainable development strategy, whether the SMA matches the CDM procedures in different countries and whether, and if yes, why DNAs consider the SMA worth applying.<sup>29</sup>

The purpose of this study is **not** to assess the success of the CDM. Many studies have been conducted (e.g. Foot, 2004a; Foot, 2004b; Cosbey et al., 2005; Cosbey et al., 2006)<sup>30</sup> which have evaluated the first achievements of the CDM. However, assessing the success of the CDM depends on the underlying value judgments. The purpose of the study is **neither** to assess the sustainability of CDM project activities **nor** to assess evaluation criteria used in all the CDM host countries.

## 4. Overview of the study

The second chapter of this thesis delineates the scientific discussion centred on the topic of sustainable development and the CDM. Against this background, the Sustainability Management Approach (SMA) providing an initial answer to the research question was developed by the author. The research methods are demonstrated in the third chapter: The SMA was applied in three case studies in Peru (business side) and assessed by DNAs in a survey (policy side). The fourth chapter presents the country background of Peru and the fifth chapter the case study data, which is analyzed in the sixth chapter. Chapter seven discusses the survey results. The eight and final chapter provides conclusions on the topic and recommendations on how to foster the contribution to sustainable development of CDM project activities.

---

<sup>28</sup> See Chapter II.

<sup>29</sup> Assuming that the answers provided by the DNA representatives reflect the political position of the Party.

<sup>30</sup> For further details, please refer to Chapter II.

## Chapter II – Sustainable development

In this chapter, the scientific background of the sustainable development debate is presented. Sustainable development is not a science on its own. The concept is reflected in different scientific disciplines. First, the history of the concept and its background are described. Second, the sustainable development discussion in two fields, namely management science and evaluation science, which are of special relevance for the present study, is set forth. Finally, the sustainable development discussion in the context of the CDM is examined and consequences from the broader sustainability debate are outlined for the CDM.

### 1. History and conceptual background

#### 1.1. Development of the concept

For a qualified discussion on sustainable development and its definition at the project level, the evolution of the concept has to be taken into account. Today, there is already a common understanding on which the considerations should be based.

##### 1.1.1. Origin

The principle of *sustainability* is an ancient concept. At that time, however, it was not yet named like that and only in the 18<sup>th</sup> century it began to jell Lumley and Armstrong (2004) cite the political debate of scientists and intellectuals from a range of disciplines (e.g. Cantillon, Quesnay, Condorcet, Galiani, Von Hayek and Marx) who recognized the need to balance economic, social and environmental sustainability in their striving for justice and the conservation of nature.

The need for sustainable development was strongly reflected by the forest management of the 18<sup>th</sup> century, marked by the plight of deforestation. This led to the development of basic principles of sustainable forest management: 1) Harvest rates should equal regeneration rates (for a sustainable yield), and 2) waste emission rates should not surmount the assimilative capacities of the ecosystem (Daly, 1990).

Nevertheless, during industrialization, the environment was seen by many people as an external factor to be dominated by humanity. In view of the limits of exploitation, which manifested themselves in increasing ecological and social problems, the concept of sustainable development was extended and transferred from the forestry context to other environmental and socio-economic areas.

##### 1.1.2. Sustainable development and sustainable growth

When addressing sustainability, a distinction has to be made between the notion of sustainable development and the one of sustainable growth. Growth describes the “quantitative increase in physical scale”, while development is a qualitative measure for “improvement and unfolding potentialities” (Hueting, 1990, 109). As the human economy is a subsystem of a finite global ecosystem, economic growth, i.e. production growth (Hueting, 1990; Hodge and Hardi, 1997), without development cannot be sustainable in the long term (Daly, 1990). During the environmental movements of the 1960s, the interest in sustainable development increased considerably, always with a focus on the environmental dimension. In 1972, the contribution “Limits of Growth” of the Club of Rome provoked a debate on population-growth control and the limits of economic growth. With the understanding that a decoupling of economic growth and resource use could be

achieved, this discussion faded from the limelight. Nevertheless, sustainable development has not lost topicality in view of pressing ecological and social problems such as climate change and poverty. The ecological footprint<sup>31</sup> of industrial countries is still too big to be globalized (Freimann, 2001).

### **1.1.3. Durability versus ethic-normative interpretation**

Initially, the concept of sustainable development was interpreted as durability which describes the formal characteristic of a system enduring in the long run. But sustainable development in its broader sense is no ecologic-scientific concept of the objective limits of exploitation of nature and environment, its core is the ethical question of equity and a balance of benefits and damages (Arnold et al., 2001a). This ethic-normative interpretation of sustainability stands for the byword of the good and the right (Thielemann, 2004).

### **1.1.4. Intergenerational and intragenerational equity**

Decisions of today's generation influence those of future generations and, for the sake of justice and responsibility, today's generation has to consider the interests and needs of future generations (*intergenerational equity*). It is, however, difficult to predict what these interests and needs will be and what resources will be needed to satisfy them. Ethical considerations also lead to distributive questions inside one generation (*intragenerational equity*). This implies on the one hand the equity disparities between developed and developing countries, and on the other hand equal opportunities in a single economy. (Burschel et al., 2003)

### **1.1.5. Brundtland definition**

The most common definition of sustainable development is the one of the Brundtland Commission from 1987 (WCED report "Our Common Future"). It is an anthropocentric definition (Lee, 2000) stressing intergenerational equity: "meeting the needs of the present without compromising the ability of future generations to meet their needs" (WCED, 1987, 8). These often cited words, however, leave many open questions (Omann, 2004): What are the needs? Do they reflect the lifestyle, the consumption pattern or just basic needs? It is already difficult to define the needs of the current generation. But what will be the needs of future generations? How many future generations have to be taken into account? What should the discount rate be? On the one hand, if inflation is expected, consumption today is valued higher than consumption tomorrow and the discount rate should be positive; on the other hand, such factors like technological progress can influence the time preference, which can lead to a higher value of assets in the future. These considerations illustrate that sustainability represents a concept which requires interpretation.

The WCED further states that "sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (WCED, 1987, 9). Apart from pointing out four main areas where sustainable development has to take place, this definition provides clarification on the use of the two concepts *sustainable development* and *sustainability*. These two concepts are often used interchangeably as both terms express the idea of a long-term temporal scale,

---

<sup>31</sup> The ecological footprint is used as an indicator for environmental sustainability. It is a metaphor (Rees, 1992) for how much land and water area a human population needs to produce the resources consumed and to absorb the wastes produced under the prevailing technology.

but sustainable development describes the process towards the final goal, which is sustainability (see e.g. Hodge and Hardi, 1997; Omann, 2004; Schaltegger and Burritt, 2005). Strictly speaking, sustainability criteria would function as tools for assessing whether a sustainable state has been reached, while sustainable development criteria would evaluate whether a progress towards the final goal has been made. Although in practice this differentiation is hardly made, the term *sustainable development criteria* will be used in this thesis.

As illustrated above, the WCED definition stays vague and non-operational. Still, this analytical weakness can in fact develop into a political strength as it has the potential to establish a political discourse (Cohen et al., 1998).

### **1.1.6. From Rio to Johannesburg**

In 1992, the UN Conference on Environment and Development (UNCED) took place in Rio de Janeiro. The three main outcomes of this conference were the UNFCCC, the Convention on Biological Diversity (CBD) and the action programme Agenda 21 (Arnold et al., 2001a). The 27 Principles of the Rio Declaration on Environment and Development (1992) postulate the precautionary principle, the polluter-pays-principle, and highlight common but differentiated responsibilities of the States. Environmental topics are in the focus of the Rio Principles, but they also establish a link between environmental protection and poverty eradication (Principle 6). The participation of the citizens is explicitly emphasized although only in the context of environmental issues. Furthermore, the vital role of women (Principle 20), the young (Principle 21) and indigenous people as well as their and other local communities (Principle 22) in achieving sustainable development is recognized (Müller-Pelzer, 2008). The concept of *sustainable development* was adopted by the Agenda 21, which is the framework that translates the Rio Principles into national, regional and local agendas and underlines the three dimensions – economic, environmental and social sustainability (Omann, 2004). Following the Rio Principles, the World Summit on Social Development (WSSD) of 1995 in Copenhagen postulated the three dimensions of sustainable development as mutually reinforcing components. During the 2000 United Nations Millennium Summit, the Millennium Declaration was adopted, containing the eight Millennium Development Goals (MDGs) strongly emphasizing intragenerational equity. These goals cover a range of developmental issues related to poverty eradication, with Goal 7 directly addressing environmental issues. The aim of the MDGs is to set concrete and quantifiable goals for governments. The 2002 World Summit on Sustainable Development in Johannesburg reinforced that sustainable development has to pursue poverty eradication, environmental protection and the breaking with unsustainable production and consumption patterns.

### **1.1.7. The concept under the Kyoto Protocol**

Sustainable development is today a widely used concept with many different meanings. Looking for orientation on the concept in the context of the CDM, the Kyoto Protocol does not provide an exact definition of sustainable development (Kolshus et al., 2001). Article 10 of the Kyoto Protocol points out, that all specific national and regional development priorities, objectives and circumstances have to be identified by the Parties themselves. The Kyoto Protocol thereby recognizes the sovereignty of the Parties and the diversity of legitimate concepts.

However, the Kyoto Protocol follows the “unwritten assumption” (Austin and Faeth, 2000, 2) that project activities reducing GHG emissions also contribute to sustainable development in the host countries. This shortened presentation has met with strong criticism (e.g. Thorne and Raubenheimer, 2001) pointing out that

the mitigation of climate change is just one aspect of sustainable development which can come in conflict with other pressing economic, ecological and social concerns (Kolshus et al., 2001).

This section showed that development is not limited to growth and that ethic-normative elements especially intra- and intergenerational aspects are taken into account. The basic definition of reference is the one from the Brundtland report, but it leaves many aspects related to the satisfaction of needs open. This definition was further shaped during the UN conferences from Rio to Johannesburg explicitly bringing specific ecological and development aspects on the political agenda. The interpretation of sustainable development in the Kyoto Protocol is attributed to the host countries but is implicitly linked to the achievement of emission reductions.

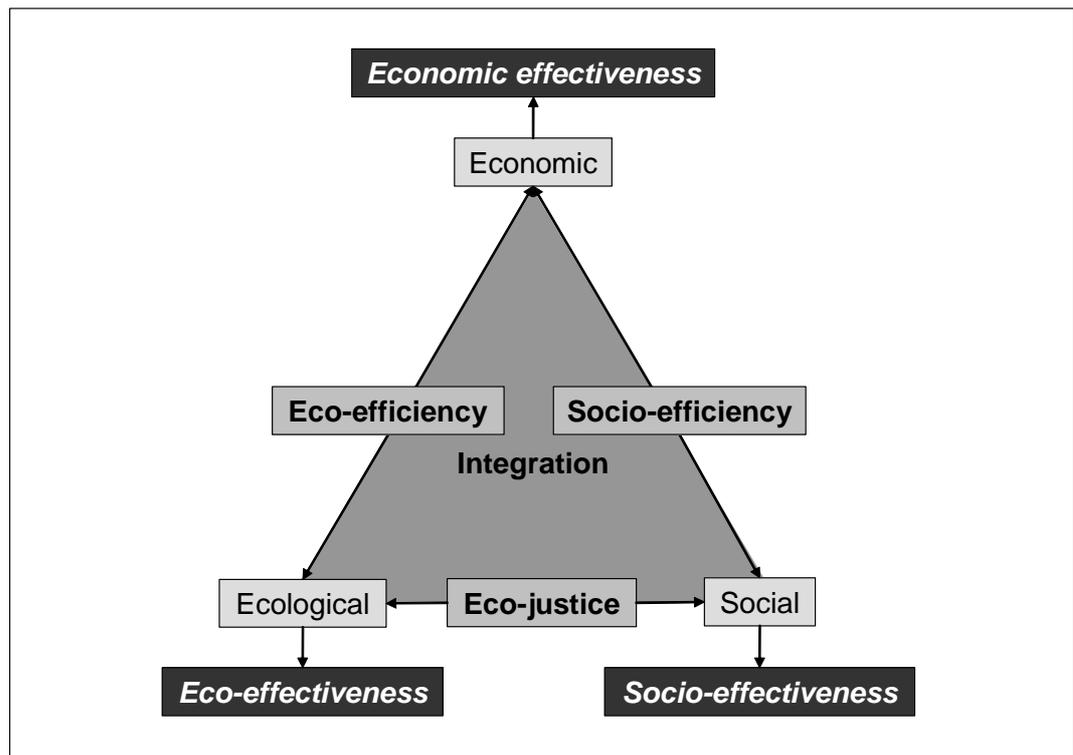
The concept of sustainable development has to be examined in detail before recommendations for CDM project activities can be made. In the following section, a short introduction into the basic concepts and discussion will provide an overview of the debate on sustainable development.

## 1.2. The three dimensions of sustainable development

Today, sustainability – as sustainable development – is generally structured along the three dimensions, economic, ecological and social, to operationalize the concept. This suggests the illustration in a triangle. Not all aspects can, however, be easily illustrated along the three dimensions, which is why other dimensions have been discussed, such as an institutional or a technological dimension. The three dimensions of sustainability are not independent from each other (Burschel et al., 2003; Omann, 2004, 68).

The sustainability triangle relates the economic, ecological and social dimensions to each other (Figure 3). Effectiveness means achieving the best-possible result, which can be differentiated along the dimensions into economic effectiveness, eco-effectiveness and socio-effectiveness. When considering the economic dimension together with the environmental or the social dimension, efficiency is in the centre of interest, i.e. the value added to the environmental or social impact per unit. When jointly considering the ecological and the social dimension, eco-justice is addressed. The big challenge is the integration of all three dimensions. (Schaltegger and Burritt, 2005)

This broad scope of perspectives in the sustainability debate goes hand in hand with the risk of arbitrariness. Due to its universality, sustainability has become a “popular ‘catch-all’ phrase” (Thielemann, 2004; Hopwood et al., 2005, 187; Schaltegger and Burritt, 2005). The sustainability triangle postulates that all three dimensions should be of equal importance, i.e. be addressed at equal weight. Nevertheless, this is an unclear definition of sustainable development which does not take into account whether the present lifestyle of industrial countries can be followed on a global level (intragenerational equity) and whether it can be maintained in the future (intergenerational equity) (Freimann, 2004).



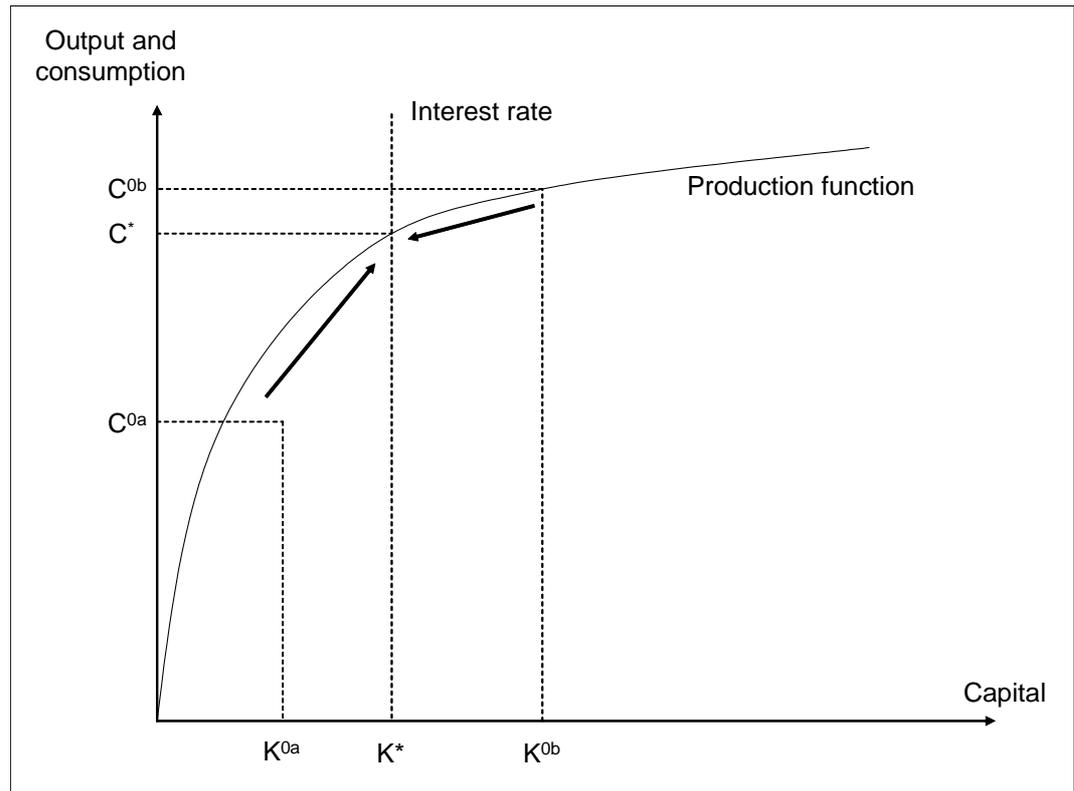
**Figure 3:** Three dimensions of sustainable development

## 1.2.1. Economic dimension

### 1.2.1.1. Neoclassical economy

During the 1940s, national accounts and calculation of gross domestic (or national) products became popular as an indicator of the well-being of a nation. The strength of GDP or GNP was that clear numbers could be communicated easily (Hodge and Hardi, 1997). Increased production was understood as key to well-being and to poverty eradication: Due to the improvement of well-being, also the lower parts of society would escape poverty, as described by Hopwood et al. (2005). Increased effectiveness was seen as a side benefit of increased efficiency, i.e. egoism was *automatically* transformed into the common good (Zabel, 2004). This tendency towards social justice is known as the *Kuznets curve* (Kuznets, 1955): Increasing prosperity leads to decreasing inequality. However, this relationship does not automatically result, but requires active redistribution (Spangenberg, 2005).

Theoretical approaches to sustainable development have been discussed in economics since the 1960s. In optimal growth models, sustainability is interpreted as non-declining (i.e. sustained) welfare. Discounting attributes less weight to the welfare of future generations. This reflects the value reduction in time due to the uncertainty of future opportunities (e.g. access to technology or capital). These neoclassical models count on a social planner who derives the optimal solution by maximizing the net present value of an intertemporal welfare function. The constraint  $investment = output - consumption$  implies that the costs of postponed consumption are offset by the capital return (Koopmans, 1965; Malinvaud, 1965; Cass, 1966). However, only man-made capital is considered in this model due to the assumption that man-made capital is nearly a perfect substitute for natural capital (Daly, 1990). The equilibrium is reached (Figure 4) (a) in case of a low initial capital by investments and consumption. But in case of a high initial capital

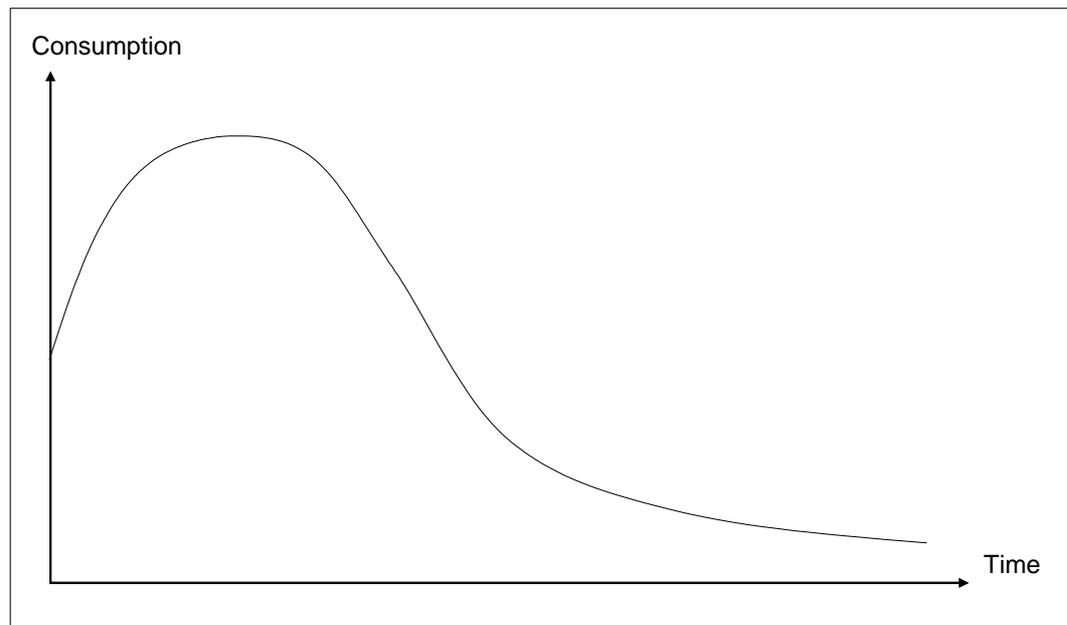


**Figure 4:** The optimal path in the present value-maximizing model

(b), investments are negative and consumption falls until the equilibrium is reached. The latter situation may happen, for instance, when the capital stock is inherited, like in the case of natural resources. The optimal path of this model then consists in an unsustainable consumption of the resources. This shows that the neoclassical interpretation of sustainability, if extended to natural capital, for instance, can lead to an exhaustion of stocks, which becomes especially relevant when they cannot be rebuilt, like in case of an ecosystem. (Markandya et al., 2002a)

Dasgupta and Heal (1974) examined the case of mixed stocks (man-made and natural capital). If the initial man-made capital stock is small while the initial natural capital stock is large, the interest rate will first be higher than the discount rate. With investments in man-made capital, the interest rate will decrease and finally fall below the discount rate. The optimal path of per-capita consumption would then decline towards zero over time (Figure 5). Thus, a maximization of the net present value is inadequate for reaching a sustainable state. (Markandya et al., 2002a)

Although, strictly speaking, non-renewable resources cannot be exploited sustainably in the sense of maintaining the non-renewable resource, sustainable use can be interpreted maintaining the benefit provided, i.e. by investing in substitutes. This is expressed by the *Hartwick rule* (Hartwick, 1977), which is based on Solow's (1974) work on the constant consumption path of a non-renewable resource in a closed economy. Hartwick points out that society should reinvest the amount of the depletion rents into man-made capital. If the resource price rises quicker than the interest rate, there will be an incentive to postpone consumption. By contrast, if the rise in interest is stronger, the exploitation of the resource will be promoted. Efficient resource depletion is reached when the marginal productivity of the resource equals the interest rate. Hartwick (1978) extended his above-



**Figure 5:** Illustration of the ‘optimal’ path of consumption according to the model of Dasgupta and Heal

described model to renewable resources. Renewable resources can be sustainably exploited as long as the exploitation rate does not exceed the growth rate, i.e. as long as the return of the marginal unit of the resource is not smaller than the opportunity cost. The complete depletion of the resource stock can be efficient if there is no point where the marginal productivity equals the interest rate, i.e. the sustainable consumption path may lead to unsustainable exploitation of resources. (Markandya et al., 2002a; Markandya et al., 2002b)

As neoclassical models focus on economic efficiency, sustainable development is a question of optimal allocation of resources where marginal damage costs equal marginal avoidance costs through the market mechanism. However, this does not correspond to many real situations: Allmende goods (e.g. the environment) are often objects of overexploitation as the exclusion principle does not apply (i.e. nobody can be excluded from consumption) but there is rivalry between the consumers. External effects take place when the activities of one consumer influence the benefit of another consumer, but this is not captured by the market mechanism. External costs are born by the general public. They equal the discrepancy between the individual costs born by the perpetrator and the social costs. Furthermore, due to risk and uncertainties, individuals have a certain preference for benefits today than for benefits tomorrow and therefore tend to discount future benefits over-proportionally. This leads to a higher current use of resources. Possible solutions are negotiations between the liable and the aggrieved party, a Pigou tax, or – as second-best solutions – the price-standard approach or trading of certificates. (Burschel et al., 2003)

To summarize, neoclassical models assume well-being is exclusively determined by consumption and substitutability between man-made capital and natural or social capital is given (Markandya et al., 2002a; Markandya et al., 2002b).

#### 1.2.1.2. New Institutional Economics (NIE)

The New Institutional Economics (NIE) builds on the neoclassical theory and extends it to incorporate the theory of institutions, which comprises the transaction

cost theory and the principal agent theory, among others – both relevant in the context of sustainable development.

Transaction costs, most prominently treated by Coase (e.g. 1937; 1991) and Williamson (1985), are opportunity costs in terms of time, energy and money associated with initiating and completing transactions. They occur in any market economy and can easily represent one-third of the GDP of a country. In developing countries, they are thought to make up an even higher fraction. The main types of transaction costs are search and information costs, bargaining and decision costs as well as policing and enforcement costs<sup>32</sup>. The minimum of the total costs consisting of environmental costs and transaction costs is the targeted optimum. High transaction costs may discourage market participants from undertaking a transaction (e.g. Michaelowa and Stronzik, 2002; Müller-Pelzer, 2004). If the approval process for a CDM project activity requires a lot of documentation, expert know-how and time, the transaction costs could become a barrier for implementation.

Information asymmetries between different actors can be illustrated using the principal agent theory (Varian, 2004). The principal hires the agent to perform tasks on her/his behalf, but s/he cannot control the agent if s/he performs them in the principal's interest, as the agent's incentives may differ from those of the principal (Fritsch et al., 2003). Problems may arise between the principal and the agent. These are known as *adverse selection*, if occurring before the conclusion of the contract, and *moral hazard* if occurring during fulfilment, i.e. after the conclusion of the contract. The agent either uses his information advantage in an opportunistic way (known as *hidden information*) or acts in an opportunistic way (known as *hidden action*) (Burschel et al., 2003). To overcome these problems, the principal and/or the agent has to become active. The control of the agent's performance by the principal is called *screening*. When the agent her/himself becomes active to reduce the information asymmetry, we speak of *signalling*. The additional costs caused by imperfect information are called *agency costs* (Burschel et al., 2003). Several principal agent constellations can be encountered in the area of CDM (see also Müller-Pelzer, 2004). The main information asymmetry is between project developers and the EB when additionality of emission reductions is assessed. The project developers are in the position of the agent, as they are required to report to the DOE and eventually to the EB, who is the principal. They have a lead in information on the project activity. There is a similar information asymmetry between the project developers and the host DNA being responsible for assessing whether a project activity is likely to contribute to the sustainable development of the host country. The DNA is dependent on the information provided by the project developers when it has to judge upon the likely sustainable development benefits accruing from the proposed project activity. A problem might also be created by another principal agent constellation: The DNA itself may become agent when it has to defend the stakeholders' interests. To fight adverse selection and moral hazard, screening and signalling are carried out under the CDM. Project activities are screened by the DOEs regarding the emission reductions, and by the DNA and their experts in the national committees regarding the contribution to sustainable development. A DOE assesses a project activity only under sustainability aspects if sustainable development criteria have been

---

<sup>32</sup> For CDM project activities, special transaction costs arise due to the administrative process: baseline determination costs, approval costs, validation costs, registration costs, monitoring costs, verification costs, review costs, certification costs, enforcement costs and brokerage costs. Above all, the level of CDM-specific transaction costs depends on the rules and procedures, the degree of utilization of the CDM methodologies and the degree of standardization. (Michaelowa and Stronzik, 2002; Müller-Pelzer, 2004)

included in the monitoring protocol. To prevent adverse selection of CDM project activities and moral hazard during implementation, clearly outlined assessment procedures for sustainable development are needed.

#### 1.2.1.3. Evolutionary economics

Evolutionary economics refrains from the neoclassical concept of a general equilibrium. Innovation processes, entrepreneurship and technical progress explain change on all levels of the economy. Georgescu-Roegen (1971) transferred the laws of thermodynamics to economy and criticized the neoclassical model of a circuit for self-preservation of the economy. Following the first fundamental theorem of thermodynamics, matter and energy cannot be produced; they can only be transformed. The second fundamental theorem states that each process of transformation causes energy loss in form of heat, increasing the entropy as a measure for disarray in a system. Thus, recycling, for instance, only reduces the increase in entropy, but cannot stop it. In a closed system, this would mean that there is no steady state of reproducibility. The earth system is, however, not an entirely closed system, sun energy is obtained from outside and only the exchange of matter is virtually closed. (Meran, 1996; Burschel et al., 2003)

#### 1.2.1.4. Ecological economics

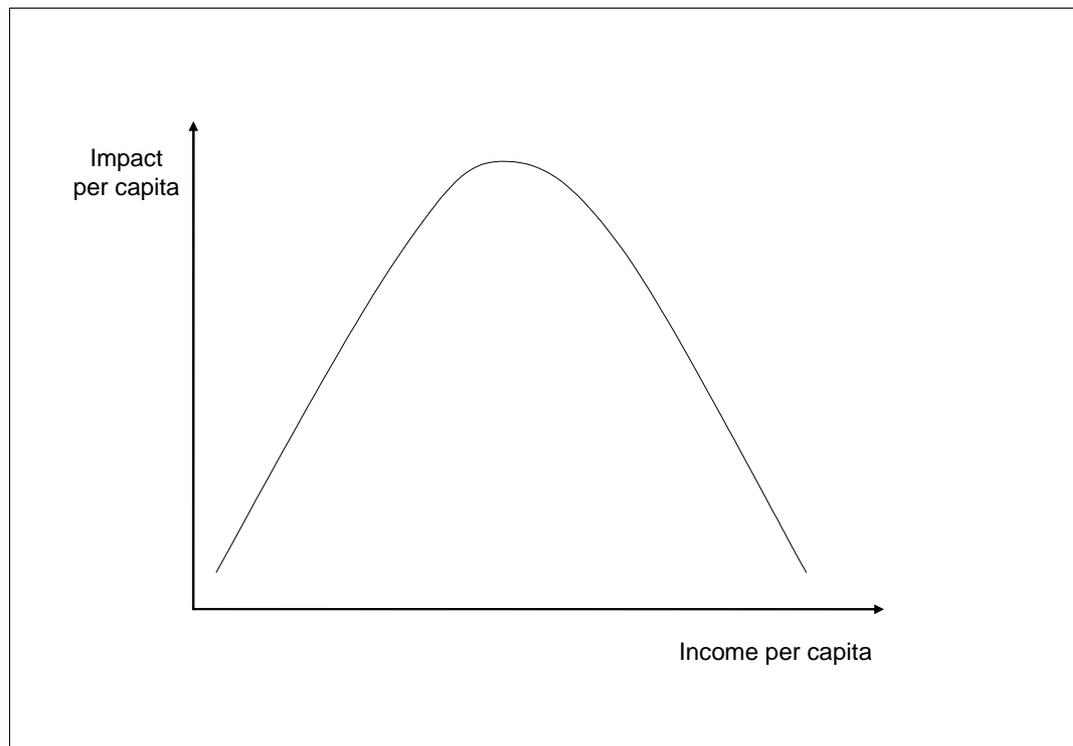
Ecological economics establishes a connection between the economic and the ecological dimension. In contrast to neoclassical economics, ecological economics focuses on ecological efficiency. It does not share the neoclassical optimism regarding substitutability between the dimensions, and intends to respect limited resources and maximum loads admissible. The use of the environment is first and foremost considered as a question of scale. Scale refers to the throughput of an economy, i.e. the scale of resource and energy consumption (low entropy) used for transformation (high entropy). The aim is to reach a steady state in a physical sense with constant resource consumption, and output in form of products and emissions. Advocates of ecological economics take entropy law as an argument against durable economic growth if not decoupled from throughput of matter and energy. They promote qualitative growth based on the increased use of renewable resources while respecting their carrying capacity. Preferences are not considered as given but as object to change. Ecological economics underlines the necessity for a society to learn and to form cultural capital. (Meran, 1996; Burschel et al., 2003)

### 1.2.2. Ecological dimension

The ecological dimension is also often named environmental dimension, but this designation is confusing as many different forms of environment exist (it could, for instance, refer to ecological and social aspects, markets, surroundings, and situations). Ecosystems are complex and consequences of human interventions are difficult to predict. The natural environment using the sun as energy source provides inputs to production, but above all so-called *Global-Life-Support services* (e.g. food, water, air, fertile soils, waste breakdown, and climate regulation), which are the conditions making human life possible. The possible uses of the natural environment for productive processes or for sustaining life often form a trade-off. As Global-Life-Support services are not traded on markets, these costs are not included in profitability calculations. (Markandya et al., 2002a, 21; Markandya et al., 2002b)

Answers to this basic trade-off have been proposed. Some scientists, like Daly (1990), defend it by claiming that there is a limit to growth. Other scientists, such

as Grossman and Krueger (1991) and Barbier (1997), reject this idea and refer to the empirically observed phenomenon of the Environmental Kuznets curve (EKC). The EKC (Figure 6) is of an inverted U-shape: After a critical level of welfare has been reached, i.e. a certain value of per-capita GDP, the trend is reversed: from then on, the richer the people are, the more they appreciate and demand a clean environment. However, the EKC is not universally valid (e.g. not for volatile organic compounds (VOCs), for energy use and waste generation) and does not capture outsourcing of harmful processes to countries with lower environmental standards. (Markandya et al., 2002a; Markandya et al., 2002b)



**Figure 6:** The stylized Environmental Kuznets Curve

### 1.2.3. Social dimension

The same set of human, natural and man-made capital does not achieve the same results everywhere and does not fully determine growth. There is another component, called social capital, which has to be considered. The concept of social capital is broad, even ill defined. Following Putnam (1993, 167), social capital comprises “features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions”. In social networks, trust becomes transitive and can therefore spread. Social capital in general describes cooperative behaviour in informal institutions, which relies on norms of generalized reciprocity and potential sanctions by the members of the network. There is a range of definitions discussed in literature which consider either horizontal networks only (Putnam et al., 1993), both vertical and horizontal interactions (Coleman, 1990), or even formalized institutions as well as social and political conditions (Olson, 1982; North, 1990). However, not all networks which are part of the social capital contribute to well-being (e.g. the Mafia). Social capital sets the frame for economic and social activities, the way information is shared and activities are coordinated as well as whether they are cooperatively realized and risk is shared. As social capital is heterogenic, it cannot be easily operationalized. It is often “undervalued and undersupplied by private agents” and, as a mat-

ter of fact, only a “by-product of other social activities” (Putnam et al., 1993, 170). Although the benefits of social capital are evident in many cases, the related costs are still difficult to estimate. According to Dasgupta and Seragelding (1999), shadow prices cannot be estimated as social capital has its highest impact in the absence of markets. For sustainable development, social capital is highly relevant, as informal and formal institutions influence the implementation of projects and policies, and vice versa. Social capital implies social cohesion which depends on the amount of solidarity in a society and an equitable distribution of benefits (Omann, 2004). Both intra-group as well as cross-group linkages are needed, the latter being the precondition for economic development. Olhoff (2002) cites the example of indigenous groups in Latin America who often dispose of a strong bonding social capital, but as they are lacking cross-group linkages, they remain economically at the margin. (Markandya et al., 2002a; Markandya et al., 2002b)

This section illustrated the development of the concept throughout a variety of disciplines to the triad which is today recognized as the common basis. Sustainable development is an interdisciplinary topic which has to be approached from different angles.

### 1.3. Integration of sustainability dimensions

#### 1.3.1. Strong versus weak sustainability

When considering different dimensions of sustainability, the question of substitutability arises. System theory differentiates between two concepts in a closed system: strong and weak sustainability. Strong sustainability (*ecocentric view*) recognizes that critical loads or levels should not be exceeded (e.g. in ecological economics); otherwise, the system collapses (irreversibility). Thus, strong sustainability does not permit substitution between dimensions, while weak sustainability (*anthropocentric view*) assumes resources are inter-changeable (e.g. in neoclassical economics), i.e. technological innovations can fully or partially compensate for extinguished resources. Under weak sustainability, only the total amount of the economic, ecologic and social assets of the society has to be maintained, but the composition of this capital stock is not of decisive importance. Assets can be natural as well as man-made. Strong sustainability argues that there is a critical natural capital which cannot be substituted by man-made assets and therefore has to be protected. (See e.g. Meran, 1996; Burschel et al., 2003; Omann, 2004; Hopwood et al., 2005; Schaltegger and Burritt, 2005.)

These are two extreme positions with several mixed positions in-between (Omann, 2004). In reality, a mixture of both interpretations is likely to be encountered, as the advocates of weak sustainability also take into account that factor substitution is only possible in a limited way (Meran, 1996). For instance, one may argue that the extinction of fossil resources can be compensated by innovations in alternative energy generation, while climate change and its consequences cannot be fully compensated by technical improvements, e.g. higher dams and stronger houses.

#### 1.3.2. Strong versus weak comparability

Strong comparability requires that a single comparative term can be defined to rank different options (e.g. utility). This is the precondition for aggregation over several dimensions. Weak comparability describes irreducible and unavoidable value conflicts which can still be managed based on rational choice and practical judgment. This is a fundamental difference between neoclassical economics

(strong comparability) and ecological economics (weak comparability). (Giampietro, 2003; Spangenberg, 2005)

Norman and MacDonald provide an illustrative example to explain weak comparability in the context of sustainable development:

[...] would a firm do more social good by donating one-million dollars to send underprivileged local youths to college, or by donating the same amount to the local opera company? How should we evaluate the charitable donation by a firm to a not-for-profit abortion clinic, or to a small fundamentalist Christian church? (Norman and MacDonald, 2004, 9f.)

Strong comparability restricts the analytical capacity of neoclassical economics for analyses in the field of sustainable development (Spangenberg, 2005).

### 1.3.3. Strong versus weak commensurability

Strong comparability implies either strong or weak commensurability. Strong commensurability states that a quantitative common measure (cardinal scale) for outcomes of the different options, which are compared, can be determined. Weak commensurability implies that only a qualitative common measure (ordinal scale) can be found. Weak comparability excludes strong commensurability. (Giampietro, 2003; Spangenberg, 2005)

A further distinction can be made between *technical incommensurability* and *social incommensurability*. Technical incommensurability means that different benefit and cost types cannot be expressed by a common measure without losing meaning. Social incommensurability describes the disagreement between stakeholders on normative values, the views being contrasting but legitimate. (Munda, 2004; Giampietro et al., 2006)

### 1.3.4. Optimization versus satisficing

The sustainability triangle postulates that contributions to sustainable development should be examined by an integrated assessment. It is important not to exclusively consider the analytical part of the assessment, as the development of such a model is based on value judgments regarding what and how to represent reality. The determination of the model is not a purely technical question but also a political one. The political process of building consensus between researchers and stakeholders is decisive for the interpretation of reality. (Cohen et al., 1998)

Normal science is known for maximization of efficiency, optimization of functions, such as utility functions and production functions. It is based on substantive rationality, i.e. individuals maximize their utility. Post-normal science, first developed by Funtowicz and Ravetz (1991), goes further. This stream of literature champions transdisciplinarity and accepts that concepts cannot be expressed in a formal way independently from the concrete conditions and the stakeholders concerned. Post-normal science takes into account that the future is uncertain, that decisions are irreversible and that quantitative projections are subject to ignorance (Omann, 2004, 78ff; Giampietro et al., 2006). It is based on procedural rationality (Omann, 2004; Giampietro et al., 2006), meaning the quality of the decision making process determines the quality of the outcome. This leads to the conclusion that sustainability cannot be objectively optimized in all its objectives, although the sustainability triangle suggests so (Munda, 2004). Omann (2004, 5) describes it as follows:

[...] in the case of sustainability there is no one and only optimal solution, but most probably a set of possible solutions. There is no one and only set of fixed criteria, but a general set of 'benchmarks', out of which criteria have to be defined according to the situation and the framework conditions.

If an optimization in all objectives cannot be achieved due to the variety of factors which can “never be completely satisfied as human desires may be unlimited” (Schaltegger and Burritt, 2005, 191), especially in the case of a multi-stakeholder process, priorities have to be set. Compliance with norms, meta-standards or claims can result in *satisficing* (Christmann and Taylor, 2001; Omann, 2004). In economics, satisficing (Simon, 1957) aims to achieve a minimum level of a variable (most commonly applied in the behavioural theory of the firm<sup>33</sup>). In decision-making, satisficing occurs when consensus has to be built. The output may not be an optimal solution for all participants, but a solution everybody can agree with. In particular when there are multiple and competitive goals and a decision has to be taken under uncertainty in a complex environment, an optimization strategy may simply be impossible with people acting under bounded rationality (Simon, 1982). Giampietro et al. (2006, 65) state:

[...] optimization in reality means looking for some reasonable compromise and that technical, legal, political and economic issues are always deeply connected in real situations.

These considerations are relevant when a sustainability strategy is developed. The solution should be at least satisficing for all variables (i.e. sustainable development criteria) and should be built on a consensus between all stakeholders. Certain aspects may be measurable and even cross-indicators may be applicable to integrate the dimensions of sustainability, but the formula to measure sustainability will most probably not be found. Neither an undoubted positive relationship between sustainability management and economic success is likely to be proven.

### **1.3.5. Consideration of trade offs**

Nevertheless, trade-offs have to be considered explicitly for decision-making. If the three dimensions of sustainability have to be taken into account in an integrative way, reconciliation of the conflicts between them is implied (George, 2001). Environmental and social aspects are not per se unquantifiable on the other hand, not all aspects of sustainable development can be objectively monetized.

#### **1.3.5.1. Cost-benefit analysis**

For quantifiable aspects, the cost-benefit analysis<sup>34</sup> is a suitable tool. It compares the monetary value of benefits to the costs which should reflect the value attributed by the society to the resources used (Pearce and Markandya, 1989, 11). It is a rational decision-making tool to ensure the economic efficiency, i.e. the benefits outbalance the costs associated with an activity or a policy. The preferences of the individuals are reflected in the willingness to pay (WTP) to secure a benefit or to prevent a loss, and the willingness to accept (WTA) to forego a loss or to tolerate a loss. The individual WTPs or WTAs are then aggregated to a total WTP or WTA (Pearce and Markandya, 1989).

The extended cost-benefit analysis (Dixon and Hufschmidt, 1986) aims to accommodate concerns about sustainable development, i.e. to integrate environmental and social values into the existing cost-benefit analysis. The total economic value consists of the sum of use value, option value and existence value. The use value corresponds to the economic value of a commodity. The option value reflects the trade-off between the discounted value of a commodity's future

---

<sup>33</sup> The traditional theory of the firm assumes that profit maximization is the goal of the firm, while behavioral theory of the firm postulates that profit is not a goal to be maximized but a constraint, i.e. a critical level of profit has to be achieved to realize other goals. (Winter, 1971)

<sup>34</sup> See also <http://www.fao.org/docrep/W7541E/w7541e0a.htm> (15.03.07).

use and the WTP of today's society or of the relevant social group to conserve it. The existence value does not consider the future use. It only reflects the value of conserving a commodity.

In the absence of market prices, WTP or WTA can be calculated based on experimental studies using contingent valuation methods<sup>35</sup> (Markandya et al., 2002b), but these often imply large data sets and thus considerable cost and time. Respondents may also have difficulties in answering hypothetical questions. WTP and WTA may even differ in experimental studies, which poses further problems to the calculation of benefits.

Apart from these technical difficulties, the cost-benefit analysis does consider neither the distribution of costs and benefits between different interest groups, social groups or individuals, nor the distribution over time, i.e. how to set the discount rate. Furthermore, the values have to be commensurable and comparable (Stagl, 2004). The fact that cost-benefit analysis avoids judgmental assessment is its biggest strength and its biggest weakness at the same time. If benefits cannot be expressed in monetary terms, other decision-making tools have to be applied.<sup>36</sup> (Pearce and Markandya, 1989, 11)

### 1.3.5.2. Multi-criteria analysis

Particularly when multiple objectives and decision-makers (e.g. stakeholders) are concerned, the conversion of all attributes and scenarios into money costs and benefits is often not possible. For these complex decision processes involving several points of view, the interactive use of a multi-criteria analysis (MCA)<sup>37</sup> (Pearce and Markandya, 1989; Stagl, 2004) is recommendable.

Its origin dates back to the 1970s when researchers discovered that environmental externalities are not covered by the cost-benefit analysis. The MCA is a trade-off analysis which employs several qualitative and quantitative criteria to evaluate different options. Each criterion should be translated into an indicator. A popular illustration is the AMOEBA<sup>38</sup> approach, a radar graph developed by ten Brink et al. (1991) to visualize trade-offs (Figure 7)<sup>39</sup>.

In an MCA, the outputs can be measured in different units, which are weighted before they are added up. These weightings can be determined by experts, stakeholders or decision-makers, and they can correspond to the prices of the cost-benefit analysis as they reflect the relative importance for each of the goals. Stagl (2004, 54) calls them "scaling factors" if they are for conversion, and "coefficients of importance" if they reflect the relative importance of the criteria. Multi-criteria methods can be compensatory or non-compensatory. Compensatory methods allow for the outbalancing of poor performance in some criteria by high performance in other criteria (this implies that results tend to cluster around the mid-point). Thus, while compensatory methods are helpful in providing measures for

---

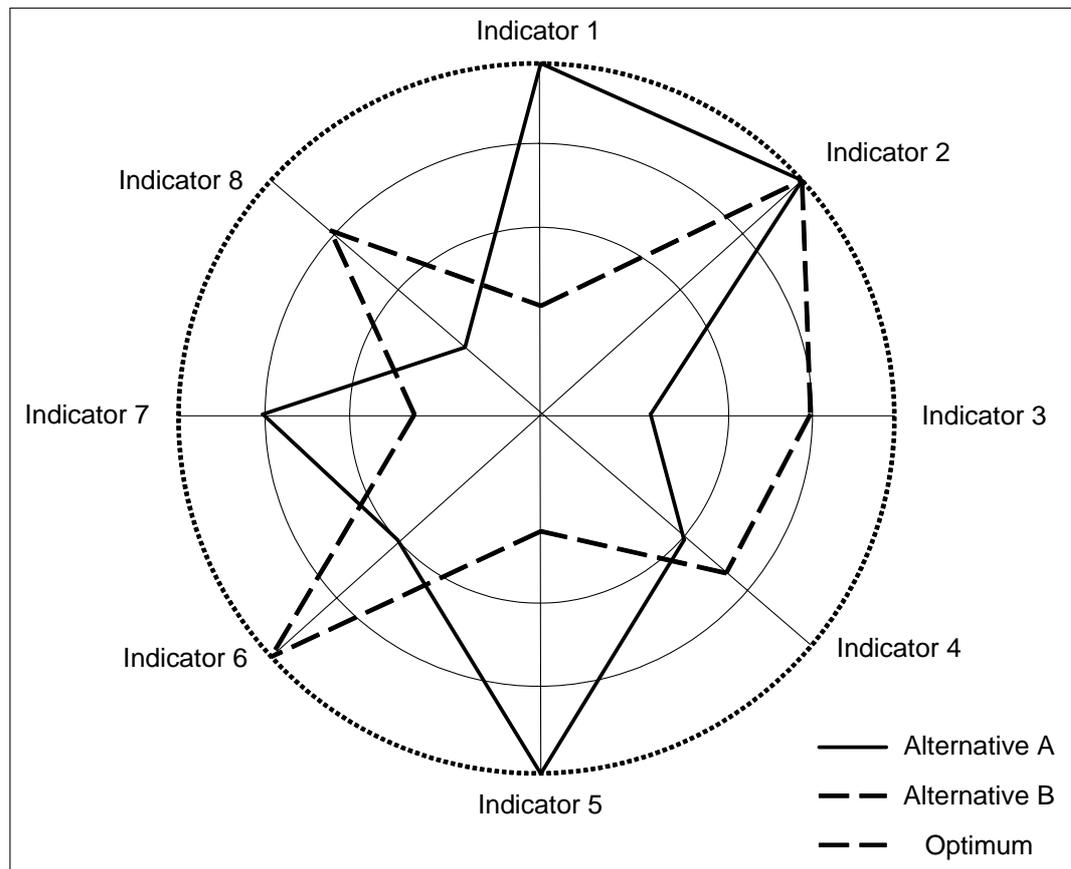
<sup>35</sup> Contingent valuation is a survey approach for non-market valuation simulating a hypothetical (contingent) market. It is controversial with regard to accuracy of results especially when it comes to passive-use values. (see Carson et al., 1993; Desvousges et al., 1993; Randall, 1993)

<sup>36</sup> Under uncertainty, risk-benefit analysis (RBA) or decision analysis can be applied. RBA is a cost-benefit analysis in the context of risky events expressing some costs in a probabilistic way, i.e. calculating the expected values. Decision analysis is similar to RBA. It is based on a payoff matrix which illustrates the different outcomes of different choices. Utility is used instead of costs to reflect the risk attitude of the investor. (Pearce and Markandya, 1989)

<sup>37</sup> See also <http://www.fao.org/docrep/W7541E/w7541e0a.htm> (15.03.07).

<sup>38</sup> Algemene Methode voor Oecosysteem-beschrijving en Beoordeling (general method for ecosystem description and assessment).

<sup>39</sup> For further graphic tools for MCA refer to Gomiero and Giampietro (2005).



**Figure 7:** The stylized AMOEBA graph

the overall performance, the strength of non-compensatory methods is that they highlight potential fatal outcomes in single criteria (Jeffreys, 2004).

If approached systematically, an MCA requires specification of the criteria influencing the final choice. They should be measurable and mutually independent. In reality, the comparability and commensurability of options is often not given, especially not in the context of sustainable development. The MCA allows for weak comparability and weak commensurability. Under these circumstances, cardinal comparisons between individuals are, however, not possible because of limited validity of interpersonal utility comparisons (Burian, 2006).

For each of the alternatives, the expected values for the criteria have to be estimated and can be displayed in an effects table (also called impact-scoring matrix). Dominated alternatives can then be discarded. Preference functions are to be defined for each criterion and alternative. These preference measures are then to be weighted. Stakeholders' values can be integrated, e.g., by letting stakeholders define the weightings of each factor (Sutter, 2003).

Utility-based algorithms allow for decision-making relying on an index which reflects the overall evaluation of the goal achievement of an alternative. They are grounded on rational decision-making and utility theory, i.e. describe the classical optimization problem (Munda, 2004). The most prominent approach is the Multiple Attribute Utility Theory (MAUT) of Keeney and Raiffa (1976). Outranking methods are grounded on weaker assumptions and require less information from decision-makers. It is rather intended to make the trade-offs transparent than to come to an optimal solution. A widely applied approach is the Preference Ranking Organization Methods for Enrichment Evaluations, in short PROMETHEE (Brans et al., 1986). For each criterion, the comparison of alternatives is done pairwise, and for each pair of alternatives, a multi-criteria index is calculated. The weights

represent the relative importance of each criterion. The sum of these indices signifies the dominance of activities. The so-called *leaving flow* describes how many alternatives are dominated by the examined alternative, while the so-called *entering flow* illustrates how many alternatives dominate the examined one. Equal flows stand for indifference between alternatives, and contradicting results of the leaving and entering flows indicates that the alternatives are incomparable (Stagl, 2004). Munda (1995) presents an advanced outranking method allowing for fuzzy numbers to reflect uncertainty and for linguistic variables to incorporate qualitative assessments.

MCA is a very broad concept which can be informal and formal, even using computer software. However, its complexity and the necessity to express objectives and values explicitly can limit its applicability. Apart from this difficulty, problems related to participation may occur. For instance, it is in most cases not possible to include all stakeholders in person, but just representatives. The views of future generations can only indirectly be taken into account. As preferences are formed based on information and discussion, the degree of elicitation of the stakeholders also determines their ability to express their interests. (Burian, 2006) Therefore, social learning should be enhanced for effective decision-making (Stagl, 2004).

This section explained why the integration of the perspectives of sustainable development is not a trivial task. Measuring sustainable development fails due to the often encountered phenomenon of limited comparability and commensurability. This implies that cost-benefit-analyses cannot generally be applied. Alternatively, multi-criteria analyses can be conducted offering useful tools for project developers such as the radar graph which can support decision making and identification of fatal outcomes. However, when preference functions have to be deduced, the application can quickly gain a complexity, which cannot easily handled by project developers without the aid of a consultant.

For the sustainability debate in the context of the CDM, two perspectives are decisive: the business perspective, i.e. the one of the project developers, and the policy perspective, i.e. the one of the DNAs. Corresponding theories can be found in the literature. In the following subchapter, the sustainability discussion will be first presented from the management perspective to take into account the business side. The policy perspective will then be discussed in the context of the evaluation theory in subchapter 3.

## **2. Management perspective**

Sustainable development goals for the entire business sector, for special sectors or even for single companies cannot be readily deduced from societal sustainable development goals. Therefore, each company has certain leeway for formulating its sustainable development goals. These become, however, only effective and credible when they go further than narrow company goals, such as security of the work environment or prevention of accidents and breakdowns. This requires the consideration of stakeholder needs and a debate about basic ethical questions. (Arnold et al., 2001a)

The following section will examine the main approaches management science proposes with regard to sustainable development.

## 2.1. Related streams of management science

### 2.1.1. Strategic views of the firm

There are two schools of thought dealing with the relationship of economic and sustainability performance. Some scholars believe that there is a fundamental trade-off (*win-lose*) between economic performance on the one hand and environmental and social engagement on the other hand (e.g. Friedman, 1970; Walley and Whitehead, 1994; Cohen et al., 1995). This conviction may be due to perceived economic disincentives for the voluntary engagement of companies. Others recognize incentives in form of co-benefits and synergies (*win-win*) (e.g. Porter, 1991; Schmidheiny and the BCSD, 1992; Porter and van der Linde, 1995; Russo and Fouts, 1997; Porter and Esty, 1998). Hoffmann et al. (1999, 2) try to overcome this ideological conflict by recognizing that “the relationship between environmental and economic interests is neither purely cooperative nor purely competitive”. They promote the consideration of both integrative and distributive aspects, as this debate is a mixed-motive situation. Following the *win-lose* orientation can prevent Pareto-efficient results while following the *win-win* orientation risks being blind to potential conflicts.

In the 1980s, Porter (1998) coined the *activity-based view* – also called *market-based view* in industrial economics – which focuses on business activities and market forces. Approaching the topic from a market-based view signifies to strive for sustainable development because the market demands so or rewards it. The market advantage to be achieved with sustainability management would consist either in a cost advantage, like lower costs due to more efficient processes, or in a quality advantage, like the company’s reputation. However, the market-based view would suppose that sustainable development is only pursued because the current market constellation requires it, which clashes with the concept of sustainable development.

In the 1990s, Prahalad and Hamel (1990) redirected the attention to the inside of companies and the combination of their core competencies as the basis of a market advantage. Following the *resource-based view* (e.g. Barney, 1986; Barney, 1991), the experience and the knowledge acquired through sustainability management create a specific capability, i.e. an asset of the organization, which cannot be easily imitated by competitors and can thus constitute a market advantage. Resources can be tangible, for instance, financial and physical resources; they can be intangible or personnel-based, such as organizational capability, culture and reputation (Russo and Fouts, 1997). Resources cannot be assessed isolated from each other and from the market conditions as the combination determines the value (Collis and Montgomery, 1995). Hart (1995) extended the concept of the resource-based view by including the biophysical constraints and opportunities. The resource-based view is complementary to sustainability management as it is performance-oriented and recognizes the importance of intangible concepts, such as expertise, corporate culture and reputation (Russo and Fouts, 1997).

The resource-based view contains a strong component of organizational learning and development (Schaltegger and Burritt, 2005, 193). Sustainability management demands high flexibility of the management and the staff. And a corporate sustainability strategy is not an orientation which once has to be decided and to be implemented, but a social search and communication process. Therefore, sustainability management has to leave room for adaptations and further development and refinement (Freimann, 2004), i.e. organizational learning.

Organizational learning (see Malhotra, 1996) can consist in *single-loop learning* or *double-loop learning*. Single-loop learning is adaptive learning to quickly cope

with immediate problems. Double-loop learning is generative learning which is institutionalized learning consisting in continuous experimentation and regular feedbacks. New ways of problem analysis and solving are searched for. Double-loop learning is especially appropriate in a fast-changing environment. As sustainable development is no static concept, single-loop learning does not capture its essence because of its ad-hoc character. Comparisons in time become difficult, as no regular feedback mechanism exists. The time horizon of single-loop learning is short and no in-depth analysis of reasons is undertaken. Therefore, a revolving approach is needed to define what is meant by sustainable development and how to implement it. Organizational change needs time. This has to be considered when introducing sustainability management systems (Hamschmidt, 2003).

Although the resource-based view provides many arguments that sustainability management leads to market advantages, it is difficult to prove a systematic relationship between sustainability management and market performance. There are many factors which vary from entity to entity, are difficult to standardize in order to compare results, for instance, the kind, the quality and the extent of the sustainability management, or its integration into the core business, i.e. the strategic management and the daily operative procedures (Schaltegger and Burritt, 2005). To open the black box between sustainability management and competitive advantage, many studies also rely on the measures reported by the companies. However, this can imply a weakness regarding validity, as not all developments and changes in a company may be so explicit that they are reported in a straightforward way. Therefore, the analysis might not really measure what is supposed to be measured (Sharma and Vredenburg, 1998). To be able to detect correlations, the kind and quality of the sustainability management system have to be taken into account as well as the level of the company's commitment. (Schaltegger and Synnestvedt, 2002; Schaltegger and Burritt, 2005)

In addition to that, it has to be questioned whether it is ethically acceptable that an organization pursues sustainability only for expected co-benefits. The idea that ethical behaviour is in the interest of an organization as it pays off in the long run is understandable in a market system, yet it can turn ethics ad absurdum. Nevertheless, a partial correspondence of ethical behaviour and corporate success can be assumed if the stakes of the public are taken seriously by the organization, i.e. legitimacy not in the sense of acceptance but as the primary concern of ethics. As Thielemann (2004) points out, a merited reputation can consist in a concept of success, but it is not a guarantee for success.

### **2.1.2. Quality management**

Quality management shows many parallels to the management of sustainable development: Already the concepts – quality as well as sustainable development – are ill defined. Originally, quality was understood in technical terms, e.g. high technical performance, long life and zero defects. During the 1960s, the customer's perspective came into focus. Quality was then defined as customer satisfaction and the fulfilment of their needs and demands. Furthermore, the perception of quality depends on the concrete context and cultural specialties. Turbid water, for example, is perceived differently by a person from an industrial country than by a local living in the dry desert of a developing country (cultural speciality). And it is also differently perceived if served in a five stars hotel (concrete context) (Stockmann, 2002). The definition of sustainable development also depends on the people concerned and the respective context in which it should happen. Like quality, sustainable development cannot be universally defined. Therefore, participatory processes have to be introduced to integrate stakeholders' views into the

design of projects and programmes (Schaltegger and Burritt, 2005, 194). Sustainability management and quality management both intend to lead to a *sound management practice*. Thus, a common mindset can be identified between these two concepts, and similar management tools can be applied.

Still, some differences exist: One of the most prominent concepts of quality management is total quality management (TQM) (Stockmann, 2002). The TQM originated in manufacturing operations and became a general management tool. It is a customer-oriented concept which comprises a set of management practices to be used throughout the organization to fulfil and exceed the demands of the customer. It seeks to integrate all processes and functions of the organization. According to the concept of TQM, an organization is a collection of processes. These processes have to be continuously improved by using the knowledge available in the company (from employees and workers). Continuous improvement refers to incremental improvements of processes for the sake of customer satisfaction. A basic tool grounded on the process of continuous improvement is the Deming-Cycle, also known as PDCA, which stands for Plan-Do-Check-Act (Bieker and Dyllick, 2006). The aim of TQM is to do the right things, right from the start, and every time.

At this point, the concept of TQM does not match the understanding of sustainable development. Often, it cannot be objectively determined what is *right* or *wrong* in the context of sustainable development. The idea of *zero defects* is marked by the technical optimization of processes from which the TQM derives. This concept does not correspond with the one of sustainable development of post-normal theory. Furthermore, sustainability management does not exclusively focus on processes; it considers also products and stocks.

This section showed that it cannot be proven that considering sustainable development leads to economic success. However, the connection between success and sustainable management can be explained via the market-based view and especially the resource-based view. Quality management is a discipline which has points in common with sustainable development, but as quality management is focusing on the reduction of defects, it is too narrow to make the broad topic of sustainable development fit.

## 2.2. Sustainability management: stages and strategies

### 2.2.1. Company-oriented sustainability

The company-oriented sustainability (COSY) concept (Schneidewind, 1994; Schneidewind et al., 1997) interprets sustainability management as a process of innovation. It only implicitly refers to the three dimensions of sustainable development (Arnold et al., 2001a) and focuses instead on monetary and physical environmental management accounting (Burritt et al., 2003). COSY consists of four levels: process, production, function and need. It departs from the ecological optimization of the production process in that it takes the product or service to be provided as a datum. At the next level, the product is optimized under ecological aspects, which includes impacts up- and downwards the value chain. These considerations can react upon the lower level of process. On the level of function, alternative ways to provide the same benefit in a more ecologically compatible way are analyzed. The needs themselves are questioned at the last level, appealing to the responsibility of the company (Fichtner, 1998). COSY provides a clear structure, but it does not throw light upon the incentives of a company to move from one level to another one. (Arnold et al., 2001a)

### **2.2.2. Phases of organizational development**

Dunphy (2003) distinguishes six phases of organizational development when moving towards sustainability: The first phase is the one of rejection, which can manifest itself in denying negative impacts or flout legislation and regulation. The next phase is the one of non-responsiveness. At that stage, the organization considers sustainability as irrelevant, ignores it and focuses on short-term profitability. Organizations falling in these first two categories, however, face the risk of losing track of market developments, which can become costly when changes have to be introduced suddenly, or even losing their licence to operate. Phase three is the compliance phase, in which organizations mainly seek to reduce risk and build reputation by respecting current legislation and regulation. In the fourth phase, opportunities in form of efficiency gains are pursued. The second last phase is the one of strategic proactivity, when sustainability has become a central part of the business strategy aiming at innovation. The sixth and last phase is sustaining corporation. At that stage, sustainability management turns into an ideological commitment beyond the search for comparative advantages.

### **2.2.3. Corporate sustainability strategies**

The St. Gallen management model (Bieker and Dyllick, 2006) distinguishes between four types of strategies along the relation to society or market and a defensive or offensive attitude of the organization: The secure strategy, defensive and oriented towards society, pursues risk minimization and dominance. The aim is to control risks which stem from unresolved sustainability problems in society. The transformative strategy is offensive and oriented towards society. Its target is to develop new markets, i.e. to provoke structural change in society. The efficient strategy is defensive and market-oriented as it pursues improvements in productivity. Its offensive counterpart is the innovative strategy which aims at generating a value added to the customers in a sustainable market segment (e.g. low-energy houses).

Huber (1995) identifies three traditional sustainability strategies, which are marked by a bias towards the ecological dimension: the efficiency strategy, the consistency strategy and the sufficiency strategy. The efficiency strategy focuses on improving the input-output ratio by reducing material and energy use during the production of a desired output. Qualitative changes are made under the consistency strategy. Noxious substances are replaced with natural substances. The needs of people are addressed under the sufficiency strategy. Customers are asked whether they really need a certain product, a specific feature, or a service to prevent unnecessary resource use.

However, as these three strategies mainly reflect the ecological dimension, Schaltegger and Burritt (2005) further identify four competitive strategies of broader societal orientation: The sustainability market buffering strategy describes the behaviour of the resistant and defensive business. Environmental and social concerns are perceived as threatening and the main goal is to reduce present regulations and prevent further ones. The sustainability cost strategy takes environmental and social claims as a datum and tries to fulfil them as efficiently as possible. It corresponds to a compliance strategy. The sustainability differentiation strategy recognizes the potential environmental and social concerns bear for a company to distinguish itself from other competitors. Under this strategy, innovations, which are also economically rewarding, are used to build the company's reputation. The sustainability market development strategy fosters markets for sustainable products. A company following this strategy stands up for stronger regulation, calls for policies to promote sustainable products and aims at changing

the attitude of the public. Both the sustainability differentiation strategy and the sustainability market development strategy are proactive. (Schaltegger and Burritt, 2005)

These categorizations provide an overview of different stages and strategies in the context of sustainability management, which can be used to classify companies and to define a company's market position in relation to the topic of sustainable development. But of course they cannot reflect the idiosyncrasy of each organization or company and the strategies used, which is finally decisive for successful outcomes.

### 2.3. Sustainability management: concepts and instruments

Due to the growing interest in sustainable development, companies have more and more actively taken into account the three dimensions of sustainability in their management. There is a variety of concepts and instruments available for sustainable development, and an extensive number of them is described by BMU et al. (2007). During the last years, i.e. between the version developed by Schaltegger et al. (2002) and the updated version of 2007, the concepts and instruments have been further developed. This includes the elaboration and increasing use of various instruments to promote social sustainability. Furthermore, integrative sustainability management was still in its infancy four years ago (Schaltegger et al., 2003), but today the first integrative approaches are applied.

Some aspects of sustainable development can directly be identified as relevant for a company's success. If they, for instance, relate to the attitude of customers and their behaviour, these aspects can be addressed by conventional marketing. The same is true for cost reductions which manifest themselves in management accounting. Many decisive issues are, however, off-market, especially when it comes to legal or societal issues, such as child labour at the company's suppliers, and can lead to boycott, political pressure and new regulations, if neglected. (Schaltegger, 2004)

In the following section, two broadly applied concepts and two frequently used instruments will be presented.

**Concepts:** Voluntary approaches of Corporate Social Responsibility (CSR) have been launched by companies to demonstrate their dedication to sustainable development. A very prominent approach, the triple bottom line, integrates the three dimensions of sustainability and aims to measure company performance.

**Instruments:** Sustainability audits are slowly being institutionalized, but most audits applied still focus on environmental aspects (Freimann, 2001). The sustainability balanced scorecard<sup>40</sup> (Arnold et al., 2001a; Dyllick and Schaltegger, 2001) pursues the integration of the three dimensions of sustainability into strategic management.

#### 2.3.1. Corporate Social Responsibility

Many institutions have launched their own networks around initiatives on Corporate Social Responsibility (CSR)<sup>41</sup>. These can be industry and trade initiatives,

---

<sup>40</sup> There are two notions being used: the sustainability balanced scorecard (SBSC) and the sustainable balanced scorecard (SBS). The different concepts will be presented in this section.

<sup>41</sup> There is no clear dissociation between CSR and Corporate Citizenship (CC). CC is either interpreted as a sub-category of CSR or the other way around. CC is often mentioned in the context of sponsoring and donations, while CSR rather focuses on the interfaces with the environment. Sustainable Corporate Governance is generally understood as the main category encompassing CSR and CC.

national and multilateral political approaches or initiatives of civil society. Civil movements tend to press for far-reaching CSR norms, while business representatives generally insist on the voluntary character of CSR. The most popular multilateral initiative is the Global Compact created by the then UN secretary general Kofi Annan in 2000.

The notion CSR was used for the first time by Bowen (1953) when he stated that businesspersons have to assume responsibility to gear themselves to the expectations, goals and values of society. CSR belongs to corporate ethics, which deals with questions of moral corporate management. Different interest groups focus on different aspects of CSR, which makes the concept similarly dynamic as the one of sustainable development. Originally, the focus was on the social component and a social dialogue, but today CSR is understood in a much broader sense as a means of achieving sustainable development in all three dimensions (Holme and Watts, 2000).

CSR pursues to enhance economic performance through a socially (and ecologically) sustainable corporate orientation. Such co-benefits can be achieved in the area of risk management, quality management or investment planning through increased quality and productivity as well as through a positive corporate reputation.

In practice, however, CSR often manifests itself only in social (and environmental) sponsoring, donations and patronage, which are often not linked to the overall company strategy. However, CSR can have a strategic component and help companies to move from passive compliance to a proactive attitude (Bassen et al., 2005; Beschorner, 2005) if ethical questions are becoming part of the core business of a company.

### **2.3.2. Triple bottom line**

The triple bottom line has developed into a widely accepted measure for organizational success. It pursues to integrate the three dimensions of sustainability: economic, environmental and social. However, the concept has also been widely criticized for its shortcomings:

MacDonald and Norman reject, first of all, the belief that an organization's performance can be measured in an objective way. And even if it could, a numeric value is not expressive. They further reject the whole concept of the triple bottom line because it uses a cost measure and offsets a *minus* in one dimension against a *plus* in another one. This "aggregation claim" of the triple bottom line is untenable according to Norman and MacDonald (2004, 4). They argue that the dimensions are not fully substitutable against each other and that sustainability is no issue for straightforward bookkeeping. In the meanwhile, the commitment to social and environmental concerns stays vague (MacDonald and Norman, 2004). The authors point out that the rhetoric of the approach can "provide a smokescreen behind which firms can avoid truly effective social and environmental reporting and performance" (Norman and MacDonald, 2004, 1).

The triple bottom line can be the expression of a purely strategically understood sustainability, just to maintain the licence to operate (Thielemann, 2001). Ethical behaviour is often reduced to be just another success factor of the organization and pursued due to utilitarian reasons. However, if ethics are not pursued for their own sake, not the ethics are decisive but the conditions under which it is *worth* pursuing them. This would mean ethics without moral, opportunism and the *ethic* of the right of the stronger. According to Thielemann (2004), the factual acceptance of the organization's behaviour should not be the ultimate goal, as ethics are controversial and there is not a unique acceptance. Organizations and especially

private companies which have to survive on the market are likely to invest in sustainability for acceptance and legitimacy (Hamschmidt, 2003). But if this is the one and only motivation, the sustainability strategy corresponds rather to the pure durability interpretation of sustainability, which cannot be considered ethical behaviour.

### **2.3.3. Sustainability audits and standards**

At the root of sustainability audits is the understanding that policy law rather bears incentives for corrective measures and maintenance when problems have occurred, but alone does not lead to innovative prevention measures in companies. The underlying management systems usually require the definition of goals, measures and indicators. A range of environmental management systems is applied in practice. Social management systems have not yet been implemented as broadly.

#### **2.3.3.1. EMAS and ISO**

In 1993, the audit system of the European Union, called Eco-Management and Audit Scheme (EMAS), was created<sup>42</sup>. EMAS is an environmental management system for the continuous improvement in goal attainment. It has been designed for internal assessment as well as external assessment by independent certifiers. The label for corporate publicity facilitates the internal and external communication of results. According to Freimann (2001), EMAS is, however, above all an instrument of environmental policy at the multi-governmental level. Experience with accounting standards tells that certification does not necessarily mean that the organization has internalized the sustainability concept. EMAS came into effect in 1995, one year before the International Organization for Standardization (ISO)<sup>43</sup> launched its international industry norm ISO14001. In contrast to the EMAS, the ISO standard is an internal management instrument which creates a private norm without the need for public reporting.

These EMAS and ISO standards can be voluntarily applied at one or several sites to develop an environmental management system. If the company passes the assessment, it obtains the respective label. The logic of these standards is based on the mechanism of market competition, which convinced many companies in the context of quality management to adopt voluntary standards. Both standards are open in their content; the user alone sets the goals as long as s/he complies with the existing legislation. Still, ISO has been more successful than the European standard EMAS, probably due to its international validity and its focus on internal processes of a company.

The criteria to assess the performance of the organization, of the management and the functionality of the processes are rather lenient. This may be an element of sustainable management practice, but it is not inclusive. Both standards focus on management processes, but the sustainability of products is not explicitly taken into account. Furthermore, how to motivate the employees is neither addressed. Finally, there are no means provided for showing whether a learning process has been initiated.

---

<sup>42</sup> See also [www.emas.org](http://www.emas.org) (2007-03-15).

<sup>43</sup> See also [www.iso.org](http://www.iso.org) (2007-03-15).

### 2.3.3.2. SA8000

The SA8000 standards<sup>44</sup> are an auditable certification standard and originate from the NGO Council on Economic Priorities Accreditation Agency (CEPAA). They were published in late 1997 and revised in 2001. An international multi-stakeholder advisory board of experts developed them in consensus-based stakeholder dialogue. These standards focus on workplace conditions in supply chains. If a company has already obtained another certification, for instance, ISO, the management system developed for this occasion can be adapted for SA certification. Even integrated audits are supported by SA8000, which can consist in not only cost savings but also a step towards integrated strategic planning. (Hamschmidt, 2003; B&SD, no date)

### 2.3.3.3. OSHAS18000

OHSAS stands for Occupational Health and Safety Assessment Series<sup>45</sup> and was developed by the British Standards Institution in cooperation with national standards bodies, certification bodies, and specialist consultancies. OHSAS18000 is an auditable certification standard comprising two parts, 18001 and 18002. It is based on the standard BB8800 of the British Standards Institution. It contains postulations for occupational safety and health management, but does not provide specific performance criteria or detailed instructions for management systems. It is based on the same management principles as those for quality and environment (e.g. ISO) and therefore facilitates integration.

### 2.3.3.4. AA1000

The AA1000<sup>46</sup> is an internationally recognized, but not certifiable, standard for the accounting and auditing of corporate responsibilities. It was launched in 1999 by the British Institute for Social and Ethical Accountability ISEA (AccountAbility). The aim of this audit system is to embed social and ethical questions into strategic management. The core element is the stakeholder engagement, which is explained in the AA1000SES manual. The AA1000AS manual deals with qualitative and quantitative data to determine the sustainability performance, as well as with systems which undergird the data and performance. It is regarded as a complement to the GRI guidelines and other standards. (AA1000, 1999)

### 2.3.3.5. Global Reporting Initiative

The Global Reporting Initiative (GRI)<sup>47</sup> was formed by the Coalition for Environmentally Responsible Economics (CERES) along with the United Nations Environment Programme (UNEP). The GRI has developed the Sustainability Reporting Framework through multi-stakeholder dialogue to bring consistency to the reporting on the three dimensions of sustainable development (Crawford, 2005). The guidelines (in short *G3* because it is by now the third version of the guidelines) are the core element of this framework (Arnold et al., 2001a). Furthermore, the framework provides indicator protocols and sector supplements to reflect unique sets of sustainability issues for selected sectors. The *G3* guidelines can be used to develop the Global Compact's annually required Communication on Progress. They are applicable to any type of organization. The GRI does not prescribe standards, but organizes the process to define practicable and acceptable indica-

---

<sup>44</sup> See also [www.sa8000.org](http://www.sa8000.org) (2007-03-15).

<sup>45</sup> See also <http://www.dgq.de/wui/wui-basis-asm.htm>, <http://www.ohsas-18001-occupational-health-and-safety.com/> (2007-03-22).

<sup>46</sup> See also [www.accountability.org.uk](http://www.accountability.org.uk) (2007-03-15).

<sup>47</sup> See also [www.globalreporting.org](http://www.globalreporting.org) (2007-03-15).

tors. Its aim is to interlink with other standards and norms. The weakness of the GRI framework is that the impacts of products (e.g. life-cycle aspects) are not treated in depth (Arnold et al., 2001a). The GRI framework is not a strategic steering instrument.

#### 2.3.3.6. Experience with standards

The experience with standards such as those mentioned above tells that environmental management standards are the most widely applied ones, but social standards are increasingly gaining ground. Nevertheless, the application of all these standards is mainly limited to bigger companies and finds special appeal in countries with strong regulation; thus, the broad effect needed is missing.

Early auditing systems were rather bureaucratic focusing on certification and securing of ability to supply (e.g. the former ISO9000). Subsequent standards (e.g. ISO 14001) rather focus on continuous improvement and controlling built on the PDCA model<sup>48</sup> (Hamschmidt, 2003). The strategic dimension, however, can be virtually omitted, as these systems are often too standardized, too formally applied and lack integration between each other as well as with the strategic and operational management.

The standards are limited in scope and even a combination of several standards does not necessarily lead to an integrative consideration of sustainable development (BMU et al., 2007). The different sets of standards used in parallel can also become confusing; more integrated systems are needed. They can facilitate prevention which is more comprehensive, but also socially complex, requiring a management practice characterized by strong employee involvement, cross-disciplinary coordination and integration as well as thinking ahead (Russo and Fouts, 1997). There are several intents to combine existing environmental and social management systems to create so-called Integrated Management Systems (IMS). However, IMS lack the political discussion of equity and would further have to demonstrate that no social damages occur (Arnold et al., 2001a) regarding aspects not covered by the system.

Most companies merely comply with the standards provided. If the standards are neither embedded into the strategic management nor adapted to the company culture (i.e. no *one-size-fits-all*), they can lead to a pure compliance mentality. Under these conditions, there is no guarantee that all preventive actions are taken (Hart, 1995; Freimann, 2001). The compliance with environmental and social auditing standards can be part of a sustainable development strategy of project developers, but risks to stay reactive. An effective improvement in performance often fails to materialize according to Hamschmidt (2003), because the systems do not offer a systematic approach to use chances and opportunities consistently as pointed out by Freimann (2001).

Inside the company, the systems are usually managed by experts without involving other employees and managers. Without the embedding in the technical day-to-day work, sustainability management risks turning into a pure lip service (Arnold et al., 2001a). Companies often react to the high relevance of off-market issues with the creation of a staff position or task force which acts in parallel to the conventional management (Hamschmidt, 2003; Schaltegger and Burritt, 2005). These satellite systems do not reflect the cross-sectional character of environmental and social aspects and bear the risk of giving away opportunities. Frequently, even market-related sustainability issues are overlooked due to this separation (Schaltegger, 2004).

---

<sup>48</sup> See also [www.epa.gov/ems/info/index.htm](http://www.epa.gov/ems/info/index.htm) (2007-03-15).

Freimann (2001) considers the overregulation responsible for this lack of internalization of the concept of sustainable development. The command and control approach is not satisfying in his opinion, because it does not lead to innovation-oriented precaution. Incentive systems would be needed instead to promote voluntary action and self-initiative, which was originally intended by, for instance, the ISO standards.

#### **2.3.4. Sustainability balanced scorecard**

The balanced scorecard (BSC) was born out of a deficit in strategy formulation and implementation (Kaplan and Norton, 2001). It is a management tool which is divided into four strategic perspectives: the financial perspective, the customer perspective, the internal business perspective and the innovation and learning perspective (Kaplan and Norton, 1992). The aim is to operationalize the strategy and to express it in cause-effect relationships, so called *strategy maps* (Kaplan and Norton, 2000) to facilitate its implementation. Strategy maps are a core element of the BSC as it makes strategic goals comprehensible and communicable (Arnold et al., 2001a). They define the key topics, the drivers, the measures for implementation as well as indicators. For implementation, a strategic feedback system is needed, i.e. the BSC has to be integrated into existing management systems. The BSC allows the inclusion of non-financial goals, uses backwards- and forward-oriented indicators as well as continuous, cyclical adjustments, and facilitates the integration in a *holistic* management and information system. However, it assumes cause-effect relationships without gaps, which may not correspond to reality. The BSC cannot provide concrete management recommendations; it is a structuring tool.

The economic dimension is dominant in the BSC. To include sustainability aspects, there are three main configurations of a sustainability balanced scorecard (SBSC)<sup>49</sup> and further mixed configurations. The additive configuration includes a fifth perspective for sustainable development, called non-market perspective, for ecological<sup>50</sup> and social aspects which are off-market (Schaltegger, 2004). The integrative configuration, which is superior, uses the same four perspectives, but over three dimensions: economic, ecological and social (Arnold et al., 2001a; Schaltegger, 2004). If sustainability management plays an outstanding role for the organization, an additional, specific SBSC for the sustainable development department may be appropriate for coordination and organization (Schaltegger, 2004). These basic configurations can be combined with each other. For example, one variation is the integrative configuration plus a fifth perspective to represent third parties or stakeholders.

The SBSC recommends at least one strategically relevant indicator for each field, but not more than about 20 in total. Like the BSC, the SBSC is not related to a specific sustainability strategy (Schaltegger, 2004). The points of criticism concerning the BSC are also valid for the SBSC. Arnold et al. (2001b) point out that the SBSC does not provide any help in defining the importance of the fields of the matrix and the causal relationships, as not all fields have to be covered neither with the same intensity nor right from the beginning.

Existing sustainability management concepts and instruments as those mentioned above can also be used to demonstrate the contribution to sustainable development by a CDM project activity. Even if not fully applied, they can provide valuable

---

<sup>49</sup> Or a sustainable balanced scorecard (SBS).

<sup>50</sup> Originally, the focus was on ecological aspects. Recently, social aspects have been included and emphasized.

input for CDM project developers who want to formulate a sustainable development strategy. Nevertheless, all these instruments have their pros and cons, and their applicability has to be analyzed for each individual case.

The most outstanding point is the dimension: the cited approaches apply to entire companies while CDM project developers seek a tool to deal with a single project activity. Nevertheless, the basic elements of the management systems and of the balanced scorecard's strategy map could be applied by project developers and could also deliver essential information on the project activities to the DNAs: this would be the systematic definition of goals, measures for implementation as well as indicators.

After having examined the topic from the management perspective, the policy side is now investigated. As the DNAs are responsible for assessing the CDM project activities, the evaluation theory is used to approach the topic of sustainable development.

### **3. Sustainability evaluation**

#### **3.1. History**

Evaluation theory is the result of an interdisciplinary discussion. Originally, the main input came from social sciences, but contributions have been made by all other sciences because evaluation became a prominent topic in all areas.

##### **3.1.1. Streams of theory**

At the beginning of evaluation theory (Stockmann, 2004), the dominant strand was methodological rigorism (e.g. Cook and Campbell, 1979; Scriven, 1980). Experimental designs were preferred to detect the *real* causal relationships in order not to base political decisions on wrong assumptions about the likely achievements of the programme. Assurance of internal validity was the main goal. However, the implementation of the experimental design often failed and a new strand aiming at enhancing the external validity developed. Evaluation mutated to a more political than scientific venture. The interests of the stakeholders were brought into the focus of evaluation. Another strand, known as the constructivist paradigm (e.g. Stake, 1983; Patton, 1987; e.g. Guba and Lincoln, 1989), questioned methodological rigorism in that it rejected the concept of a one and only *true* reality. By contrast, the constructivist paradigm departed from the concept that reality is socially constructed of diverse perspectives which are in conflict with each other. From the constructivist paradigm then came the transformative or participatory (Mertens, 1998; Mertens, 2004) paradigm. Evaluation was intended to actively involve the stakeholders, to give them a say and to overcome existing structures of influence and power. Today, broad consensus has been reached that evaluation is necessary in order to take into account stakeholders' needs, and that quantitative and qualitative methods can often be well combined (e.g. in a mixed-method approach) to enhance validity (Stockmann, 2004; Chen, 2005). The focus no longer is on the absolute merits of a method, but rather on whether and how to use the research techniques to come to the most conclusive findings. The type of question to be investigated is decisive for the appropriate choice of methods. Further, the results of an evaluation should be useful for decision taking in politics and management.

In comparison to other objects of evaluation, the evaluation of sustainability faces special challenges due to its comprehensiveness. Ideally, all aspects related to the

ecological, economic and social pillars should be examined at all scopes, time scales and from different points of view, but the more stakeholders become involved, the more complex, time consuming and costly the process becomes. The impacts are often difficult to measure, as a vast set of interdependencies and external influences has to be taken into account. Therefore, evaluations of sustainability are exposed to high subjectivity in assessment.<sup>51</sup> Consequently, there exists no common consensus, which could lead to a standardized assessment of sustainability (Knoflacher et al., 2003), but guidelines have been developed.

The Bellagio Principles for Assessment (Hardi and Zdan, 1997) were developed in 1996 by the IISD staff and a group of experts and collaborators with support from the Rockefeller Foundation. Still today, there are a reference point for sustainability evaluation.

The 10 Bellagio Principles form guidelines for sustainability assessment which should all be applied together. They approach four topics: The first principle describes the starting point of any evaluation, which is the vision of sustainable development and the definition of the corresponding goals. Principles 2 to 5 deal with the content of the evaluation: The assessment should be holistic, i.e. take into account the whole system, the three dimensions of sustainability and the related impacts. It should consider equity and disparity, ecological conditions as well as economic and non-market activities. The scope of the evaluation in terms of time horizon and geographical space should reflect the long-term character of sustainable development. Projections should be based on past and present conditions. Progress toward the sustainability goal should be evaluated by using a set of categories or a framework that establishes links between goals, criteria and indicators. For practicality reasons, only a limited number of issues and indicators should be approached. Measurement should be as standardized as possible and indicators should be compared to reference values (e.g. targets or benchmarks). Key issues of sustainability assessment are highlighted by principles 6 to 8. The evaluation should be transparent by making judgments, assumptions and uncertainties explicit and providing access to methods and data used. The assessment should be presented simply and clearly, correspond to the needs of the audience, and encourage an exchange of ideas. Stakeholders should be adequately represented and decision makers actively involved. Finally, principle 9 and 10 highlight that continuity of assessment is required. The evaluation should be ongoing and adaptive to establish feedback mechanisms for decision-making and to promote learning. Responsibilities have to be assigned, institutional capacity has to be built, and assessment capacity has to be fostered.

The constructivist paradigm postulates that there is no one and only *true* reality, but that reality is socially constructed. The diverse perspectives are in conflict with each other. This is why stakeholders have to be actively involved. This insight supports a bottom-up approach.

The Bellagio Principles highlight some core aspects: to make an evaluation possible, sustainable development as well as the corresponding goals, links between goals, criteria and indicators have to be defined in the concrete context. The scope of the evaluation has to take into account the entire system, the three dimensions of sustainability and the related impacts. The principles also emphasize stakeholder participation. Feedback mechanisms and clear responsibilities are recommended.

---

<sup>51</sup> This section is based on Müller-Pelzer (2008).

## 3.2. Core elements of sustainability evaluation<sup>52</sup>

As the Bellagio Principles are not comprehensive from today's standpoint, the requirements for sustainability evaluation have to be examined to provide guidance to the DNAs and project developers. Based on a literature review, the following elements for the assessment of sustainable development were deduced:

### 3.2.1. Holistic approach

Most importantly, evaluations should follow a holistic approach (Hardi and Zdan, 1997; Chen, 2005) which addresses all dimensions of sustainability. A generally accepted systematization divides sustainability into three dimensions: the ecological, the economic and the social dimension. An evaluation should address them simultaneously and balance them against each other in decision-making. This does not mean each evaluation has to deal with all three aspects equally. On the contrary, it is the key to a high-quality evaluation to find the right balance between the three dimensions, which is a very context-specific task. Regarding the CDM, no holistic evaluation approach has so far been established. The ongoing assessment focuses on the calculation of the emission reductions achieved by the project activity while neglecting other aspects of sustainable development. The assessment of a project activity's sustainability is the responsibility of the host country. As neither guidelines nor standards have to be formulated, the process is not transparent for outsiders.

### 3.2.2. Time scales

Sustainable development may be evaluated at different time scales (Hardi and Zdan, 1997; Knoflacher et al., 2003). If the short-term time horizon is in the centre of interest, an evaluation concentrates on direct output and/or outcomes, i.e. it deals with the direct effects induced by the intervention. However, it is inherent to the concept of sustainable development that the final important question is whether any effects may be noticeable in the long term. To measure this, the impacts have to be analyzed. This can be done *ex ante* to anticipate the likely contribution to sustainable development, or *ex post* to facilitate accountability. The long-term time horizon also incorporates the concept of intergenerational equity. The evaluation of long-term effects very much depends on the quality and quantity of available data. Regarding climate change, it is very difficult to predict the exact long-term impact of emission reductions. This can only be estimated by using scientific models. Although climate change is already noticeable everywhere today; future generations, especially in poorer countries, will suffer most from its consequences.

### 3.2.3. Spatial scales

Sustainable development may also be measured at different spatial scales (Hardi and Zdan, 1997; Knoflacher et al., 2003), e.g., at a local, regional, national or global level, inside a single company or a society. The CDM, for instance, should first and foremost lead to sustainable development in the host country, i.e. at the local level. Yet, as the concept of sustainable development in its perfection is not limited to national frontiers, improvements can be achieved on the global scale. Climate change is a global phenomenon and thus a suitable example for impacts at global level. Climate change caused by increased GHG emissions, for instance, can be felt all over the world. Likewise, the reduction of such emissions is noticeable everywhere, no matter where it has been achieved.

---

<sup>52</sup> This section is partly identical with Müller-Pelzer (2008).

### **3.2.4. System dynamics, risks and uncertainties**

Sustainable development is confronted with system dynamics, risk and uncertainties (Stirling, 1999; Knoflacher et al., 2003) for two main reasons: first, the consequences of unsustainable development can be disastrous; second, the relationships between the elements leading to sustainable development are complex. It is often difficult to evaluate the effects of an intervention, as external influences have to be taken into account. The evaluation has to be designed as such to measure whether the results can actually be attributed to the intervention or if they are caused by other influences. Climate change is a phenomenon extremely exposed to dynamics, risk and uncertainties. Therefore, it is part of the *precautionary principle* to initiate mitigation measures now to prevent disastrous consequences in the future. Regarding the sustainable development in the host country, even if it has been forecasted that a CDM project activity will contribute to the sustainable development of the host country, it does not imply that the promised benefits will materialize, and if they do, it has still to be demonstrated whether this was due to the project activity.

### **3.2.5. Values**

When an evaluation is undertaken, the assessment is based on a value system (Stockmann, 2004). A challenge for an evaluator who performs an evaluation for a third party is weighting the criteria against which the intervention has to be assessed to reflect the value system of the client. The evaluation should not reflect the subjective appreciation of the evaluator; it should always be designed for the client. Since the client is in most cases not one person but a group of people with diverse priorities, the identification of the values as well as their relative weight is complicated. The more heterogeneous the group representing the client, the more difficult it is to complete the normative component of an evaluation. In the context of CDM project activities, the clients of the evaluation are the DNAs and the EB, but always in their function to preserve the stakeholders' interests. The participatory method MATA-CDM (Sutter, 2003) allows the integration of different value systems into one system, which is then applied to evaluate project activities.

### **3.2.6. Participation**

The next aspect to consider is participation (Aarhus Convention, 1998; Chambers and Mayoux, 2004; Chen, 2005). When the value system is set up, stakeholders' participation is crucial as they are the ones affected by the project activities and therefore need to have a say. Stakeholders' participation is intended to influence the normative character of an evaluation. This does not mean the stakeholders' interpretation has to be incorporated into the value system across the board. It is the role of the evaluator to critically assess the outcomes of the stakeholder consultation and to design the criteria and indicators in such a way that stakeholders' values are included appropriately. An evaluator therefore has to consult the stakeholders before setting up the evaluation system.

Searcy et al. (2005) emphasize that the definition of indicators is an iterative process and that stakeholder involvement is especially needed when the draft indicators are developed, tested, adjusted and finally approved. The principal motivation for this stakeholder involvement is not empowerment, but the elaboration of high quality indicators. Therefore, the stakeholders knowledgeable about each respective indicator should be involved.

Participatory approaches are quite cost-effective as they quickly bring together views, information and knowledge of many participants. However, reliability is a challenge for participatory methods as the discussions can be biased. Participants

may be dominant and hinder the consideration of other views. Discussions can also divert to other topics. As participation is usually voluntary, systematic sampling is not possible. The information gathered has to be interpreted and maybe aggregated, which can become a difficult exercise due to the complex nature of the topic. Moreover, those who did not take part in the discussion may find it hard to follow the topic. Thus, the methods used may remain unknown to the participants, which can result in lack of understanding. Therefore, well-trained facilitators are needed to guide a participatory process all of the time. (Chambers and Mayoux, 2004)

Strong value judgments form the ground for participatory processes and have to be made explicit: Should all stakeholders have the same importance? How can stakeholders not able to actively participate be involved? Should decisions be based on the majority principle? Should minorities have veto power? How should equity and income distribution be dealt with? To incorporate these aspects, evaluators have to choose appropriate participation tools (e.g. surveys, focus groups, interviews, public hearings). (Munda, 2004)

Despite the drawbacks of the participatory approach, stakeholder participation is a crucial element of the CDM process (stakeholder consultations are mandatory). MATA-CDM (Sutter, 2003) also encourages participation: The sustainable development criteria are set by a pool of experts and the country-specific weightings are determined in a stakeholders' survey.

### **3.2.7. Process**

Sustainable development is not a steady state, but it describes the process towards sustainability. It has to be adaptive and to allow for continuous adjustments and improvements. Feedback loops are essential to be on track and to facilitate institutional learning. The evaluation of sustainable development is not only intended to measure effects but also to provide guidance for process improvement (Stockmann, 2004). As the concept of sustainable development corresponds to a long-term perspective, its evaluation has to be understood as an ongoing process. The purpose of an evaluation is to learn from past experiences and to improve future actions. At this point, learning theory may be used to design this continuous cycle of acting, checking, learning and improving.

This section showed that the boundaries have to be set as broad as feasible to include external influences as well as further impacts of the project. Furthermore, the precautionary principle has to be adopted as the consequences of unsustainable developments can be devastating. An evaluation is always based on value judgments which is why stakeholder participation is key. The value judgements have to be made transparent. Evaluation provides feedback which can be used for further improvements.

## **3.3. Types of evaluation**

According to the moment of an evaluation, the function of an evaluation and the stages of a project or a programme to be evaluated, different types of evaluation can be distinguished.

### **3.3.1. Moment of evaluation**

An *ex-ante evaluation*, also called *prospective evaluation*, assesses the coherence of the elements, i.e. it tries to discover discrepancies and incompatibilities between different goal system(s), policies and priorities on the one hand, and be-

tween the goals, the activities planned and resources needed for implementation on the other hand (Langer and Schön, 2002).

An *ongoing evaluation*, also known as *process evaluation*, is undertaken during implementation and operation to ensure that “the process is on the right track” (Langer and Schön, 2002, 2). Ongoing evaluation is meant to identify and eliminate weaknesses, and thereby to lead to improvement, innovation and organizational learning. In this sense, it matches the concept of quality assurance. (Langer and Schön, 2002)

*Ex-post evaluation*, or *performance evaluation*, assesses outputs, outcomes and impacts to demonstrate progress and to ensure accountability. The focus is on efficiency and especially effectiveness, including the analysis of cause-effect relationships. With the data obtained, the initial hypotheses can be tested. (Langer and Schön, 2002)

### **3.3.2. Functions of evaluation**

An evaluation not only aims to measure effects but also to provide guidance for process improvement (Stockmann, 2004). Two kinds of evaluation may be distinguished: A *formative evaluation* aims to make timely troubleshooting possible. A *summative evaluation* aims to provide conclusions on accomplished interventions, which should provide information on how to better design future interventions. These recommendations may include institutional changes. (Müller-Pelzer, 2008)

### **3.3.3. Project or programme stages**

Programme theory teaches that, in the planning stage, evaluation has to provide orientation as later failures often occur because of essential errors in implementation mostly due to poor planning and development. In the initial implementation stage, evaluation should be internal and give timely feedback to identify problems and to launch corrective measures. Frequent adjustments are needed to ensure that the actions correspond with the specific circumstances of the project or programme. In the mature implementation stage, the objective still is to improve the programme, but strong modifications can inhibit operation. Since evaluation at that stage focuses rather on the assessment of efficiency and effectiveness, a holistic process evaluation is appropriate. In the outcome stage, the goal achievement is in the focus of impact evaluation. Programme stages are not necessarily linear in reality (Chen, 2005). For instance, stages can be overlapping or left out. These stages apply also to the evaluation of projects.

According to the CDM evaluation framework, an ex-ante evaluation (the validation) as well as an ongoing evaluation (the verification) of CDM project activities takes place. However, if sustainability aspects are not included in the monitoring protocol, they are not subject of the ongoing evaluation. There is no obligatory ex-post or impact evaluation for CDM project activities.

## **3.4. Making concepts explicit**

As discussed above, the range of approaches (such as Cost-Benefit Analysis (CBA) and MCA) available for decision-making can also be used for evaluation purposes. However, before applying these instruments, the concept of sustainable development has to be made explicit as there is no generally applicable system of reference to assess sustainable development. The definition of the referential framework is crucial for the quality of the evaluation. It works like a map providing orientation, and it aims to make sustainable development more tangible and

operational (Langer and Schön, 2002). The following methods, whose purpose it is to make the underlying concepts explicit, are based on the theory-driven evaluation of programme theory (e.g. Chen, 1990). They have been designed especially for the implementation of political programmes (due to the need to demonstrate progress to the public), but provide useful inputs also for management strategies and projects.

### **3.4.1. Change model and action model**

A conceptual framework consisting of a change model and an action model helps to understand the relationships between the components of a programme. The change model (Chen, 2005) is a set of descriptive assumptions and refers to normative theory. It explains how the activities undertaken lead to the outcomes and consequently to goal fulfilment. Unintended effects also have to be considered. The action model (Chen, 2005) is a set of prescriptive assumptions and refers to causative theory. It illustrates how the activities are implemented. The action model activates the transformation process in the change model.

### **3.4.2. Logical framework analyses**

Programme theory is closely linked to *programme logic* and the *logical framework model*. Today, many variations of the logical framework analysis (the corresponding documentation is also known as *logframe*) find broad application, including the planning, stakeholder communication, implementation, improvement and evaluation of projects or programmes.

#### **3.4.2.1. The logframe**

The logical framework (logframe) model was developed by the United States Agency for International Development (USAID) in 1969 to evaluate international aid programmes. During the next two decades, the logframe became widely used and was adopted by the World Bank in 1997 (World Bank, 2000). The technique used is back-casting, i.e. reasoning backwards from the desired results (i.e. the results framework). According to the World Bank, the development of a logframe should be participatory, help to resolve conflicts, be flexible and process-based. The World Bank's logframe consists of a 4 x 4 matrix differentiating between four columns and four lines. The lines correspond to the strategy, the impacts, the deliverables (outputs) and the key component activities. The first column describes the causal logic of the objectives. The second column describes the performance indicators and targets. The third column specifies the data sources for each indicator. And the fourth column illustrates the underlying assumptions.

The framework of goals, sub-goals, preconditions and activities for implementation provides the priorities for the choice of indicators. The framework and the indicators form an interactive relationship. Lack of data for indicators shows either that monitoring systems have to be urgently implemented or that the framework itself (e.g. the assumptions) is not adequate and should be adjusted. These cross-checks are needed to foster anticipatory capacity. (Hodge and Hardi, 1997)

#### **3.4.2.2. Logic model**

The term logic model is usually used interchangeably with programme theory, although, following Chen (2005), both notions describe different concepts. Programme theory focuses on the descriptive and prescriptive assumptions while the logic model stresses milestones. Chen describes the logic model as a simplified version of programme theory which aims at making a programme evaluable (while programme theory intends to produce sound programmes).

The logic model originates from the work of Suchman (1967) and Weiss (1972). A forerunner of the logic model is the *hierarchy of evidence* developed by Bennett (1975). For the first time, the notion was used by Wholey (1979). It was born out of a need to analyze why programmes did not achieve their expected results. A logic model is a systematic and visual way to illustrate an underlying theory, establishing links between the programme components. It is the core of the logical framework analysis, filling the *logframe matrix*. Subsequent versions of the logic model were developed. The version of the United Way of America (1996) differentiates the programme components into inputs, activities, outputs, and outcomes. The basic logic model describes the connection between the planned work (inputs and activities) and the intended results (outputs, outcomes and impacts). *Inputs* are the resources (human, financial, organizational, community) used to carry out the activities. *Activities* are the interventions, i.e. processes, actions, tools or technologies. *Outputs* are the quantifiable products of the activities. They are the basis for the development of indicators for monitoring. The indicators measure the progress either qualitatively or quantitatively (Searcy et al., 2005). *Outcomes* are the changes achieved for the participants of the project or programme (there is usually a differentiation between short-term, mid-term and long-term outcomes), while *impacts* are the long-term changes for the larger community even if the intervention has already expired. (W.K. Kellogg Foundation, 2004; Chen, 2005)

In the context of sustainable development, the logic model is a tool to explicitly explain how the planned activities will lead to sustainable development. Short- and mid-term outcomes are no sufficient proof for sustainable development. It is therefore essential to show how the single activities can achieve long-term impacts and which unintended effects can be anticipated. This is the basis for a sound evaluation of the contribution to sustainable development.

The concrete shape of the logic model depends on the information it has to deliver. It can focus on single aspects such as the assumptions of the underlying theory (*theory approach model*), the relationship of inputs, activities and outcomes (*outcome approach model*), or on the implementation process (*activities approach model*). In practice, logic models are often a blend of these different approaches. The basic model can be extended: Influential factors beyond the control of the developers can be taken into account, stakeholder needs can be explicitly integrated into the model, the underlying assumptions can be unveiled and targets/indicators to measure the results can be defined. (Anderson, 2005)

Logic models have been strongly criticized for depicting an unrealistically fixed and closed system (*blueprints*). A logic model is just a snapshot at one point in time and may change over time, because it only illustrates the current understanding of a situation. In response to the criticism, changes to the logic model are intended as the logic model supports learning and information exchange. It has to be considered as a working draft. To illustrate this need, there is a talk of *temporal logic model* allowing for periodical recording of changes, interim assessments and incorporation of modifications. It can therefore be used as a strategic decision-making tool. (den Heyer, 2002; W.K. Kellogg Foundation, 2004)

A single person can develop a logic model, but the perspective would be rather limited. A group process helps to achieve a shared understanding and, especially when dealing with complex topics (such as sustainable development), the variety of perspectives helps to reduce error. Interdisciplinary topics require expertise from different scientific fields. Furthermore, stakeholders can provide valuable information on their needs. They can take an active role in realizing the activities.

The logic model describes the concept of reality, but the concept itself, the underlying theory, is not questioned. This is, however, necessary to obtain valuable evaluation results. (W.K. Kellogg Foundation, 2004)

### 3.4.3. Reconstructing the underlying theory

Any framework reflects a certain interpretation of what reality is (Hodge and Hardi, 1997). The theory can be scientific or stakeholder-implicit (Chen, 2005, 38ff.). Leeuw (2003) discusses three approaches to discover the underlying theory: the elicitation methodology, the policy-scientific approach and the strategic assessment approach.

#### 3.4.3.1. Elicitation methodology

The elicitation methodology is based on cognitive and organizational psychology. It forges links between policy sciences and organization studies. It aims to unveil the *mental maps* of the participants about the organization and its environment. An analysis of the tacit knowledge is a basic step for a learning organization to undertake. It enables the organization to differentiate between theories-in-use and espoused theories (i.e. the *official* version). The evaluator can examine the record of strategic intentions, the decision-making in action and/or the behaviour in strategic breakdown situations. Trigger questions are applied to elicit the theories-in-use. The elicitation approach is strong in unveiling hidden concepts, but the knowledge bases and the criteria used remain inexplicit. In addition to that, it is not an easy task to formulate the appropriate trigger questions and to create the right atmosphere for answers. The approach would be applicable to CDM project activities if there was always an evaluator present, but this is generally not the case when the sustainability strategy is developed by the CDM project activities.

#### 3.4.3.2. Policy-scientific approach

The policy-scientific approach is empirical-analytical and based on documents and interviews. Initially, the evaluator searches for behavioural mechanisms which explain why a certain problem has to be resolved. These mechanisms are detected by studying available formal and informal documents and interview transcripts. The statements explaining the need for action are compiled, linked to the goal of the intervention<sup>53</sup> and reformulated into propositions following the structure *if-then, the more x, the less y* or similar. As a next step, an argumentational analysis, based on Toulmin's model (Toulmin, 1958), is carried out. At this point, the warrant, which can be described as the *because*-part of the argument, is discussed. These warrants have then to be formulated following the same scheme as the propositions structure. A chart showing the supposed causal links should be drawn as it helps in structuring the issue. Finally, the evaluator's task is to examine the validity of the underlying theory, i.e. the logical consistency of the propositions, the empirical correspondence and the steerability of the variables.

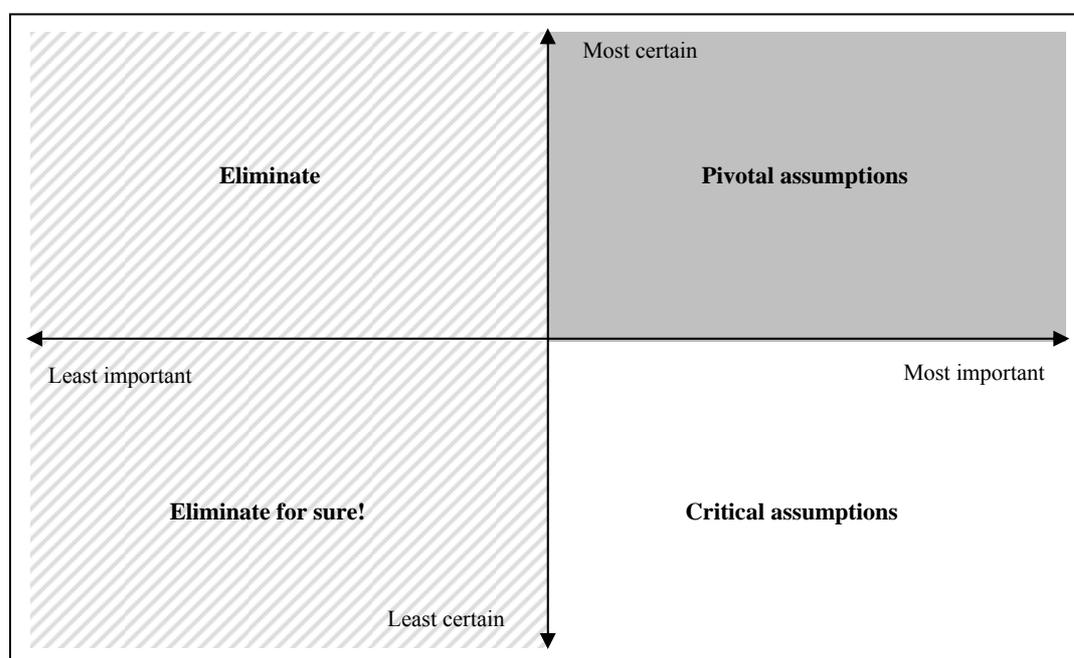
This approach could be suitable for DOEs during the validation phase. The strengths of the approach are that it supports the use of several data sources and methods in parallel (triangulation), and that its assessment is based on empirical findings. However, as it does not take into account social and behavioural group dynamics, it is not recommendable as a management tool for CDM project activities.

---

<sup>53</sup> In evaluation theory, an intervention is a policy or program. Here, it refers also to the sustainability strategy of the project activity.

### 3.4.3.3. Strategic assessment approach

By contrast, the strategic assessment approach promotes group dynamics. Its function is to discuss the underlying assumptions of a theory. The strategic assessment approach consists of four steps: group formation, assumption surfacing, dialectical debate and synthesis. The intra-group sampling of persons should be as homogeneous as possible and the inter-group sampling should be as heterogeneous as possible to obtain a convergence of viewpoints inside the groups and maximal divergence between the groups. The groups are then separated to develop the assumptions which support their preferred strategy. The assumption surfacing is divided in two parts. First, the groups identify the stakeholders who can affect the outcome of the strategy (stakeholder analysis). Second, based on research, the groups formulate their assumptions on the stakeholders' behaviour supporting the preferred strategy and rank these assumptions following their importance and certainty. The pivotal assumptions are those of high importance and certainty. Those of high importance but low certainty show possible points of weakness of the strategy. Assumptions of low importance can be eliminated from the list (Figure 8).



**Figure 8:** Assumption rating chart (Leeuw, 2003, 12)

During the dialectical debate, the groups present and defend their strategy, basing their argumentation on their pivotal assumptions. The aim of the dialectical debate is to make all participants understand all argumentations. The last step is the synthesis: the assumptions are negotiated between the groups. This can comprise reformulation of the assumptions until a consensus can be reached. The synthesis can result in an (partial) agreement and/or disagreement. If no agreement can be achieved, further steps to overcome these differences have to be undertaken.

The discursive elements make the strategic assessment approach ready to be used in management processes. It further supports empowerment, participation and democratization. However, the strategic assessment approach also includes some weaknesses: The validity assessment of the assumptions is based on unspecified criteria, the role of research is not clearly outlined and the design of the approach supports groupthink, *yea-saying* and distortions due to different power positions among the participants.

### 3.4.4. Immanent versus exmanent frameworks

Langer and Schön (2002) distinguish *immanent* and *exmanent* frameworks: Immanent frameworks are based on the goals of the concrete project or programme (usually in bottom-up approaches), while exmanent frameworks follow the political or scientific concepts of sustainable development (usually in top-down approaches). Both approaches can be reductionist: Immanent frameworks often address only a certain part of sustainable development or do not explain the link to the upper sustainability goal. Exmanent frameworks are often limited to a certain set of indicators and rather provide insight into impacts than processes. Furthermore, the concepts of politicians or scientists are not necessarily congruent with those of project managers or evaluators. Decision-makers or stakeholders are not always motivated to consider long-term impacts because they appear irrelevant in their rather short- and mid-term time horizon and might even interfere with their interests. (Knoflacher et al., 2003)

The logic model (the logframe) is a tool which can broadly be applied to different evaluation types. Goals, sub-goals, preconditions and activities for implementation as well as indicators are systematically defined. If recursively applied, it does not only deliver information for decision making but also allows for further improvements. To enhance the quality of the model, the underlying assumptions should be reconstructed and questioned. If a bottom-up approach is chosen, the project developers should always try to establish the link to the national or global development goals to counterbalance the weakness of immanent frameworks (loosing the connection to the upper goals). These elements could be applied by project developers and could also deliver essential information on the project activities to the DNAs.

### 3.5. Evaluation fatigue

To any evaluation, there is a limit in effectiveness: Evaluation fatigue is the well-known phenomenon that stakeholders or decision-makers develop during the various evaluations in which they have to participate. The active involvement diminishes, and the evaluation loses in quality. Thus, evaluation does not follow a *the-more-the-better* rule, but one of its crucial characteristics should always be efficiency. This aspect has to be considered when proposing an approach to CDM project developers as the demonstration of sustainability is just one element of the CDM project cycle.

Thus far, the general theoretical considerations regarding sustainable development have been presented with special focus on the management and evaluation perspective. In the following subchapter, the sustainability debate directly related to CDM will be described. Based on this comprehensive consideration of the topic, a solution to the dilemma of the DNAs will be proposed.

## 4. Sustainable development in climate policy

In this section, the CDM context will be presented and analyzed. This is first to provide an overview on the research conducted in this area and second, to screen the literature for applicable approaches. To measure the contribution to sustainable development of CDM project activities, different approaches have been developed which mainly consist in sustainable development criteria, checklists and multi-criteria approaches.

## 4.1. Formal preconditions for assessment

In his recently published master thesis, Burian (2006) examines the assessment of sustainable development in the context of the CDM. One of his recommendations is to include a specific section in the PDD dedicated to the discussion of the project activity's contribution to sustainable development including quantifiable commitments. Burian further points out that a serious stakeholder consultation is a necessary requirement. To develop expressive indicators, stakeholders' input should be the starting point (Searcy et al., 2005). Strictly speaking, it is too late to consult the stakeholders when the whole project design has been completed. Stakeholder involvement requires to be monitored. Nevertheless, corruption of stakeholders cannot be completely precluded.

## 4.2. Proposals for assessment

Different ways of how to capture sustainable development in CDM project activities have been discussed by several scholars.

Banuri and Gupta (2000) analyze the potential contributions of CDM project activities to sustainable development. They point out that the static welfare approach considers all financial inflows and technological transfers as contribution to sustainable development. However, this approach overemphasizes the financial component while neglecting environmental and equity questions. It is decisive to unveil who benefits from the CDM to judge upon its contribution to sustainable development. The institutional approach would stress the improvement of structural conditions and the political economy approach would go even further and consider all kinds of capacity building necessary for development. The authors recommend first an assessment of financial additionality, second of employment generation as a criterion for social and developmental aspects, third of local environmental impacts as a criterion for economic and environmental aspects, and fourth of access to technology.

Anagnostopoulos et al. (2004) approach the sustainability discussion from an engineer's point of view. They argue that a single set of sustainable development criteria is needed, as the host countries lack institutional capacity to develop their own assessment system. The authors define sustainable development along four dimensions: economic, environmental, social and technological. In the opinion of the authors, progress on the four dimensions has to be monitored separately, but interactions between the dimensions have to be analyzed. The authors developed 10 criteria and 19 corresponding indicators including transfer functions to describe a project activity's negative or positive impact on sustainable development. Each criterion is grouped under *its* dimension. However, this structuring does not stand for an objective truth. A reduction of unemployment, for instance, can be part of the social dimension, but also of the economic dimension, e.g. as a sub-goal of local economic development. Furthermore, not all criteria and indicators are operational and adequate in all contexts, such as in the case of rapid urbanization. This can be a goal for sustainable development in a specific context. Under other circumstances, it would stand for a negative impact. This shows again that the difficult part of the discussion about sustainable development is its context-specificity. No information is provided on how the criteria and indicators have been determined and why the authors believe they are adequate. Furthermore, the dependencies established by the transfer functions are not obvious in all cases: the higher the energy efficiency, the lower the use of non-renewable resources for energy generation. This is not true in the case of rebound effects. If adequately determined, transfer functions might be useful in the end for measuring the contri-

bution to sustainable development, but the authors leave the main question of how to define sustainable development aside.

Humphrey recommends a “global standard for ‘fair CDM’ label” (Humphrey, 2004, 88). He argues that initially cost would be high to develop such a standard, but it would be less expensive than developing specific standards for each project activity or project developer. The point of criticism is that Humphrey bases his recommendation on a pure cost comparison and ignores problems of standardization. The assessment of sustainable development cannot be standardized as easily as the calculation of emission reductions. It cannot be broken down into sustainability units. Therefore, Humphrey’s idea of independently traded sustainable development certificates does not appear feasible, at least not at a global level due to incomparability.

The SouthSouthNorth appraisal matrix (Thorne and Raubenheimer, 2001) is the forerunner of the CDM Gold Standard. To assess single project activities, a set of 24 criteria is used consisting of eligibility criteria, sustainability indicators and feasibility indicators. The eligibility criteria have to be fulfilled (Yes/No scale) while for the other two sets of indicators the rating ranges from -3 for very negative effects to +3 for very positive effects. The importance of a high level of stakeholder involvement is pointed out. According to Thorne and Raubenheimer, sustainable development can be measured by the units of development generated and the growth in capacity. Translated to the concepts used in this dissertation, the units of development correspond to the sustainable development outputs of the project activity. Growth in capacity to receive, manage and benefit from the outputs generated can be interpreted as the mid- and long-term outcomes and impacts. A point of criticism of this methodology is that the weighting is based on the subjective judgment of the evaluator.

Huq (2002) presents the experience of the PCF (Prototype Carbon Fund). He points out that an assessment of the contribution to sustainable development has to take place at the individual project activity level. He proposes a scale from -1 to +3. On this scale, -1 stands for negative impacts, 0 for a neutral situation, and between 1 and 3 points can be obtained based on the number of positive impacts: one benefit in one category, two or more benefits in two categories, and significant benefits in three or more categories. Yet, a simple counting of the benefits is not a valid assessment procedure as it may produce distortions.

Kim (2003) examines sustainable development benefits generated by the CDM in South Africa. Barriers of implementation are analyzed and the diverging views of the stakeholders are illustrated. The author points out that a standardization of sustainable development criteria faces the difficulty that the conditions of the project activity and the criteria have to match. For instance, one priority of the host country can be to use local employees. This is, however, not reasonable and feasible when the needed skills are not locally available, e.g. technological skills. Kim further highlights that it may be unrealistic to meet all stakeholder needs with one project activity. The author provides thereby an argument for case-specific sustainable development criteria (see also Wilbanks, 2003).

### 4.3. Synergies and integration

The link between climate change mitigation and sustainable development has been analyzed by several authors. The search for synergies, *win-win* potentials, has been prominent, but the question of how to enhance the focus on equity issues and, broader, how to achieve an integrated assessment of the different dimensions of sustainable development has remained unresolved and thus requiring further research.

In their article, Beg et al. (2002) examine links between climate change and sustainable development. The authors see synergies between climate change policy and other developmental priorities, such as prevention of desertification, protection of biodiversity, transport and energy efficiency. They establish three main aspects of sustainable development: equity, health and life quality. Inequities are likely to be increased by climate change, as developing countries are the most affected with the least financial means to protect themselves. The authors also point out that non-economic aspects of sustainability cannot be analyzed in a cost-benefit or cost-effectiveness analysis as a monetary quantification of such aspects is not possible.

Cohen et al. (1998) draw attention to the fact that climate change has been subject to a natural science approach and sustainable development to a social science approach, which explains the difficulties of an integrated assessment. Due to this separation, climate change has turned into “a problem of atmospheric emissions largely divorced from their social context” (Cohen et al., 1998, 360). The authors demand the consideration of a wider range of future scenarios. They claim that equity has to become a key issue in the climate change discussion, which would allow differentiating between luxury emissions and survival emissions (see also Sokona et al., 2002). Michaelis (2003), however, points out that there is no general agreement on the differentiation between *necessities* and *luxuries*, because the concept of *need* is based on a value judgment.

Davidson et al. (2003) propose the *development first approach* to support integrated strategies of sustainable development as well as climate change mitigation and adaptation. Strong links between sustainable development and climate change can be established within the context of the development issues of food, water and energy provision. The authors call for more policy coherence and the use of synergies. However, this is a big challenge, as amendments to existing policies would be needed in order to adjust and align them to each other.

Fichtner et al. (2002) propose to integrate sustainability into linear optimization models. By including the sustainable development criteria in the restrictions of the optimization problem, cost minimization would remain the superior objective, i.e. the economic dimension would be dominant. To balance the three dimensions of sustainability, the authors suggest minimizing the distance between objectives and target values. How to define these sustainable development criteria and how to express them as costs is, however, not discussed.

#### 4.4. Link to equity discussion

Climate change affects all stakeholders, but these effects are not distributed equally. Some stakeholders are affected worse than others are and cannot afford to pay themselves for adaptation, e.g. least developed countries (LDCs) and small island developing states (SIDS). Currently, the CDM concentrates in countries disposing of institutions, capacity and market opportunities (Silayan, 2005) as these general conditions make these countries attractive to investors.

Apart from this distributive question, the CDM has been criticized for its ecological and institutional shortcomings as well as for provoking increased inequities at international and local level (Ott and Sachs, 2000; Pearson, 2004).

Brown (2004) and Brown and Corbera (2003a) and (2003b) examine impacts on the equity of forest carbon projects in Bolivia, Brazil, Belize and Mexico. They use a multi-criteria assessment; the criteria have been determined by experts and stakeholder consultation, the weighting by stakeholder representatives. Three elements of equity are identified: equity in access, e.g. to markets and forests (i.e. ability to engage and participate of different stakeholders); equity and legitimacy

in institutions and decision-making (i.e. involvement of different stakeholders) as well as equity in outcome (i.e. the impacts on different stakeholders). The research results indicate a distributional inequity of the cost and benefits of forest projects. Moreover, the study concludes that the priorities of the different stakeholders diverge considerably.

Gundimeda (2004) takes a critical look at the likely contribution of land-use change and forestry (LUCF) projects to the livelihood of the rural poor in India. She concludes that common property resources (CPRs) are safety nets and generate visible and invisible, often undervalued benefits. From a long-term perspective, sustainable use of the CPRs can come into conflict with the needs for fuel wood and timber of the local poor. She describes that influential households tend to control the CPRs as soon as they become profitable as carbon sequestration. This aggravates the social disequilibrium. Therefore, it is crucial to actively involve the poor households, i.e. to offer them alternative, affordable sustainable fuels, to give them management responsibility of the CPRs and to channel the additional income from carbon sequestration activities to the poor.

Cosbey et al. (2005) published the first of three reports of a research project on how to enhance the development dividend of the CDM in 2005. The second one followed in 2006. In the first report, the IISD conducted a survey to examine stakeholder views on the contribution to sustainable development of the CDM. Cosbey et al. point out that the CDM might increase the initial disequilibrium between developing countries. As capacity building and the distribution of CDM project activities follows the market mechanism, the investments are made in the countries with a high CDM potential (see also Sokona et al., 2002). These are generally those countries which have sufficiently developed institutions, infrastructure and markets, and need little support to achieve competitiveness. Therefore, African countries are still strongly underrepresented in the CDM pipeline while China, Brazil and India together account for two-thirds of the CERs (Cosbey et al., 2006). However, this is an intended effect of using the market mechanism: The CDM helps Annex I countries to pick the most cost-effective emission reduction opportunities, i.e. the *low-hanging fruits* first. Least developed countries are left with the *higher hanging fruits* because they lack the needed infrastructure and general market conditions to become attractive to investors. They become attractive for the CDM mainly when the low-hanging fruits are gone. This illustrates that the question of climate change is treated separately from the one of sustainable development and distributional equity (Cohen et al., 1998).

#### 4.5. Lack of sustainable development impulses?

Umamaheswaran and Michaelowa (2006) examine additionality and sustainable development issues of energy efficiency project activities. They conclude that the contributions to sustainable development are minuscule. Only selective improvements have been achieved, but no development impulses have been generated. The authors report that stakeholder consultations have not been carried out satisfactorily as stakeholders have not been identified properly in several project activities. Moreover, it cannot always be retraced whether stakeholders have really participated or have just been invited to the consultation meeting and been informed about the environmental and technical aspects of the project activity. The authors rarely observe technology transfer and indigenous technology development.

Cosbey et al. (2005) point out that the CDM stays behind its potential especially in three sectors: industrial energy efficiency and power sector, renewable energy sector and small-scale community projects activities. In the second report (Cosbey

et al., 2006), the picture changed: a significant rise in energy efficiency and renewable energy project activities is recorded. According to the authors of the first report, the implicit goal of cost-efficiency could be missed, as the administrative costs of the CDM are likely to be too high when only few project activities are implemented. Project developers might also lose interest if they cannot achieve a reasonable price margin for their emission reductions on the market. The fear that the market could be flooded by cheap CERs did, however, not materialize as the second report (Cosbey et al., 2006) shows. The CDM market grew considerably, more than predicted; yet, the demand for CERs is even higher and it is likely that only one-third of it will be covered (a market offer of about 1 billion CERs of the current pipeline against a demand of 3-3.5 billion CERs).

Many authors try to shape the definition of sustainable development on a broader scale. However, the main limiting factors for assessment are not the institutional capacity of the DNAs nor the costs involved in developing an approach. The barrier is above all the political question of independency and home rule for developing countries. Some authors are not aware of the limits in quantifying sustainable development impacts, but other authors do recognize the context specificity. Quality labels can set incentives, but are inherently limited to a smaller share of projects as they are a means for differentiation from other project activities in the market. Although synergies can be identified, this does not resolve the difficulty that sustainable development is still subject to inherent trade-offs due to its broad character. The equity discussion underlined again the need for stakeholder participation.

## **4.6. Main approaches implemented**

Different approaches exist which intend to ensure that CDM project activities contribute to sustainable development. In the following section, some basic characteristics of these approaches will be discussed. In practice, combinations of these approaches can be found.

### **4.6.1. Selection by project type**

The selection based on project type is a straightforward approach, but its weakness is validity.

#### **4.6.1.1. Negative list of project types**

A negative list specifies which project activities are not eligible, e.g. some project activities are generally not eligible under the CDM. The Marrakesh Accords exclude nuclear emission reduction projects from the CDM as they are not considered as a sustainable answer to climate change. In 2005, the EB declared that project activities with a baseline scenario of unsustainable biomass use are also not eligible under the CDM. Since then, this issue has stayed on the agenda and a final decision is expected at the 13th Conference of the Parties COP13. The sustainability of large dams (water reservoir) is also divisive, e.g. heatedly discussed among some European Parties. Such a project activity would most probably not pass the environmental impact assessment and would thus not be eligible as a matter of fact.

#### **4.6.1.2. Positive list of project types**

By contrast, a positive list names explicitly the project types which are eligible. This approach is used, for instance, by the CDM Gold Standard, by the Dutch CERUPT programme and in the Marrakesh Accords for land-use, land-use change

and forestry (LULUCF) CDM project activities. When a positive list is applied, all eligible project categories are explicitly named. A positive list does not stimulate innovation as much as it tends to lag behind the developments. It has always to be amended before a new project type can apply for acceptance.

## **4.6.2. Guidelines and recommendations**

### **4.6.2.1. Guidelines**

Guidelines are rules which provide necessary information on the eligibility of project activities and are defined by DNAs or investors (e.g. funds). They should further tell project developers how to design project activities to meet the host country's development priorities. As guidelines are meant to cover the widest possible range of project types, they stay too general to assume this second task.

### **4.6.2.2. Recommendations**

Recommendations can be similar to guidelines if they stay rather general and non-binding. On the other hand, they can be close to requirements if they create an informal standard as a matter of fact. Recommendations offer more political flexibility than guidelines and requirements as they have not to be formally established and can be more easily adapted to new understandings.

## **4.6.3. Criteria and requirements**

### **4.6.3.1. Requirements**

Requirements consist in features or documents a project activity has to dispose of when applying for approval. Prominent requirements are the EIAs, the approval letters of corresponding ministries or the (formally) correct conduct of a stakeholder consultation. The CDM Gold Standard is a quality label for CDM project activities establishing an enhanced control procedure by the DOEs: It supplements the PDD by 5 further Annexes. These contain a sustainable development assessment, a positive list of eligible project activities, an Official Development Assistance (ODA) screen<sup>54</sup>, an obligatory EIA as well as stricter criteria for the stakeholder consultation.

### **4.6.3.2. Qualitative thresholds**

Under qualitative threshold tests, Cosbey et al. (2006) subsume the qualitative discussion of the contribution to sustainable development or answers to a list of questions (if the answers are not scored during assessment). The weakness of these tests is the subjective judgment and the limited comparability between project activities.

### **4.6.3.3. Negotiated targets**

Targets can be negotiated between the project developer and those who have a say in the implementation, i.e. stakeholders or even the DNA. In several countries, the DNA recommends project developers to hand in a social investment plan. This plan has to be negotiated with the relevant stakeholders. It offers project developers the opportunity to compensate possible negative impacts of the project activity. However, power constellations and lack of understanding sustainability can deteriorate the quality of the negotiated targets.

---

<sup>54</sup> The ODA screen aims to check whether or not Official Development Aid (ODA) is involved in a CDM project activity.

#### 4.6.3.4. Multi-criteria analysis

Multi-criteria approaches have been widely applied to CDM project activities (e.g. Huq, 2002; Begg et al., 2003; e.g. Sutter, 2003; Brown et al., 2004). Either a project activity has to comply with minimal standards per criterion or the aggregated result is the basis of assessment. The strengths and weaknesses of this approach were discussed above in section 1.4.5.2.

#### **CDM Gold Standard**

The CDM Gold Standard is based on MCA. It relies on the subjective judgment of an auditor (the DOE) who rates a project activity on each criterion between +2 and -2. The impact on each criterion has at least to be neutral. The use of the Gold Standard PDD is voluntary. The main point of criticism is that DOEs are not necessarily familiar with issues related to sustainable development. They are accredited by the EB and designated by the COP for the technical and sectoral scopes<sup>55</sup> for which they can prove the necessary expertise. However, it is assumed they are competent in assessing sustainability without their expertise being assessed. Furthermore, the assessment of sustainability is not binding – unlike the calculation of emission reductions. In case of not meeting the minimal requirements of the Gold Standard, the PPs do not have to fear further consequences apart from not being awarded the quality label. The Gold Standard is therefore not an instrument to improve the quality of a CDM project activity: Although the criteria of the Gold Standard have been set with the aim of being comprehensive, they may not perfectly match each single project activity because sustainability is complex and difficult to standardize. The price of standardization is loss in expressiveness. The Gold Standard functions as quality label for CERs, which signals higher quality of a project activity in comparison to ordinary project activities. Project participants hope to obtain a premium price on the market; however, this effect is uncertain. Thus, project participants mainly use the CDM for image reasons. If they have little doubts about meeting the Gold Standard requirements, they are likely to bear the additional effort, but most project participants are likely to go for the easier solution.

#### **MATA-CDM**

MATA-CDM was developed by Sutter (2003) to enable the DNAs to develop criteria and indicators which reflect the stakeholders' interests using a participative approach. Sutter's analysis was conducted in India, South Africa and Uruguay. Convinced by the tool, the DNA of Uruguay decided to officially adopt it to define the national sustainable development criteria and indicators. MATA-CDM takes account of the sovereignty of the DNAs and supports the decision-making of the DNA, which consists in approval or rejection of project activities. As in a number of developing countries the democratic culture is not well established, it is likely that the benefits of the strength of the approach (i.e. its participatory characteristic) will probably not be largely recognized. Furthermore, DNAs may not be willing to take a clear stand on their assessment criteria, as strict requirements may reduce the host country's attractiveness to investors. The opportunity for obtaining foreign currency is a short-term, concrete objective which may influence the decision-making stronger than the long-term, vaguely perceived benefits of sustainable development. MATA-CDM uses a utility function and thus assumes indicators are at least weakly commensurable and options are at least weakly comparable. It also aggregates the judgments of many individuals in a cardinal

---

<sup>55</sup> 15 "sectoral scopes" were identified by the CDM Accreditation Panel, which are available on the CDM website <http://cdm.unfccc.int/DOE/scopes.html#11> (2005-07-11).

way so that strong comparability is required. However, these assumptions may fail when sustainable development is the object of evaluation.

### **CCB Standards**

The Climate, Community and Biodiversity Project Design Standards (CCB) Standards for LULUCF projects were developed by the Climate, Community and Biodiversity Alliance (CCBA, 2005). According to these standards, the projects are assessed by using a checklist (yes/no) along four sections: general, climate, community and biodiversity. The validation levels range from *approved* (project satisfies all 15 requirements), *silver* (project satisfies all 15 requirements and receive at least one point in three of the different sections) and *gold* (project satisfies all requirements, has a minimum of six points, with at least one point in each of the four sections). This assessment is more rudimental than the CDM Gold Standard and MATA-CDM. And the counting of the benefits entails certain weaknesses regarding the validity of the results.

### **Development Dividend**

The Development Dividend (DD) of the IISD initiative is also based on the MCA. The assessment is differentiated along project categories<sup>56</sup> and provides a standardized scoring for defined characteristics to reduce subjectivity. In its present state, it is based on the information provided in the PDD which is insubstantial in most cases and can therefore not reflect the actual contribution to sustainable development. A fundamental assumption of the DD approach is that sustainable development can be defined at international level, with which neither most scholars nor most politicians agree.

The overview provided in this section demonstrates that there is no systematic approach in use

- a) which can be applied by the project developers without the help of a consultant and
- b) which provides information on the goal hierarchy, the activities, the indicators and the underlying assumptions needed for a sound evaluation of the contribution to sustainable development.

However, basic elements (the definition of goals, activities/measures, indicators, and the questioning of underlying assumptions) should be applicable by project developers without the need to appoint a consultant and should provide the necessary information to the DNAs.

## **5. Proposal**

Intergovernmental organizations are already today under pressure to produce quality credits and therefore might have an interest in a standard for excellence (Cosbey et al., 2006). Although private sector buyers are not so likely to go much beyond compliance, the topic is gaining relevance for them, too, because CSR management has become a strategic topic: Following the Resource-Based View (RBV), addressing sustainability can create capabilities in the company, which can be translated into a market advantage and thereby create direct value added for the company. CDM project developers as well as the DNAs are exposed more and more to public pressure, especially as the CDM market volume is growing

---

<sup>56</sup> Cosbey et al. (2006) provide indicators and scoring for the following categories: agriculture, biogas, biomass energy, cement, energy efficiency households, energy efficiency industry, energy efficiency service, fossil fuel switch, fugitive, geothermal, HFCs, hydro, landfill gas, N<sub>2</sub>O, solar, and wind.

considerably. The Kyoto Protocol clearly states that a CDM project activity has an obligation to contribute to sustainable development. As a result, the project developers and DNAs will be under pressure to act. It is thus highly recommendable for CDM project developers and DNAs to innovatively address this issue already today and to prevent negative publicity and possible sanctions in future.

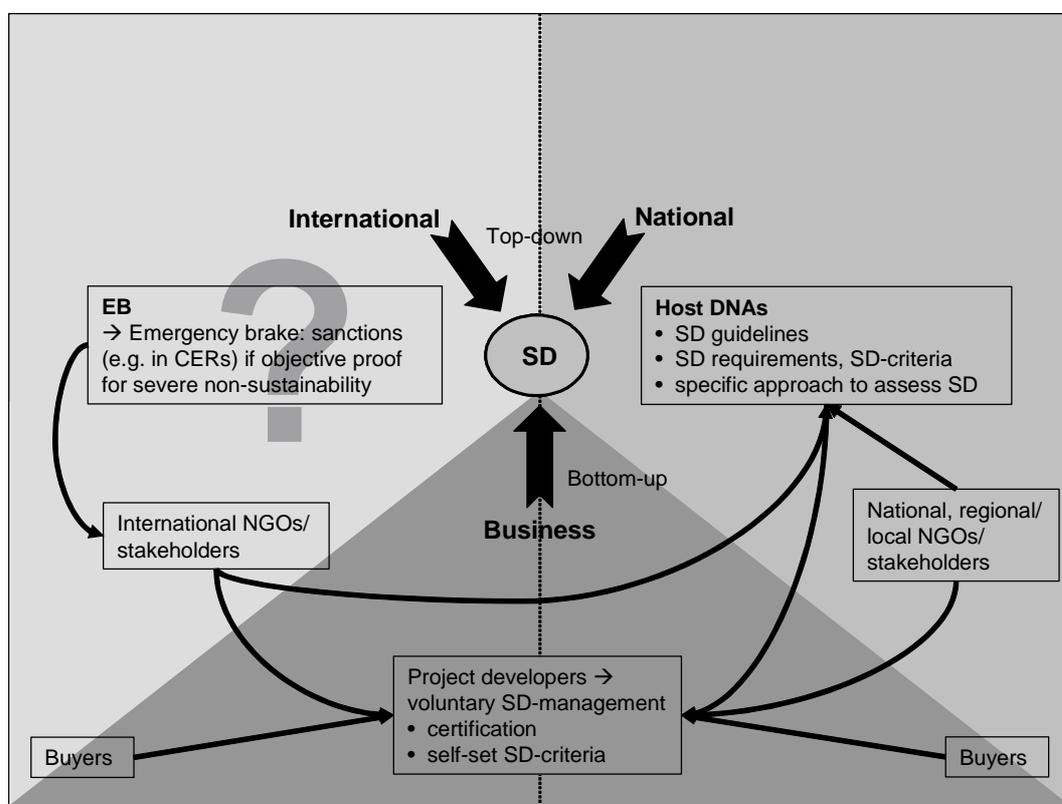
If DNAs try to escape their dilemma by defining soft thresholds for CDM project activities (i.e. to prevent the worst), sustainable development will not be achieved because project developers are likely to follow a compliance strategy. Yet, as the compliance strategy does not create value added for the companies, it is just perceived as another limitation to be taken into account. Thus, the monitoring system runs the risk of becoming a bureaucratic parallel organization.

Value added can, however, be created if the company considers the chances in form of learning culture, innovation and real participation of the employees. These can consist in the identification of new chances and risks such as increase in energy efficiency and cost reduction, increase in customer satisfaction (depending on the product and the customer) and increased social acceptance of the company (Arnold et al., 2001b). Proactive behaviour can be better achieved through offering the right incentives than through enforcing regulations.

Project developers and DNAs are slowly finding themselves driven into a tight corner due to the growing awareness on sustainable development and the pressure exercised by the public. To overcome this DNA dilemma, a combination of minimal standards and sustainable development goals to be set by the project developers themselves is proposed.

## 5.1. Minimal standards and self-set goals

A solution can be to combine minimal standards, which form kind of a baseline or threshold, and sustainable development goals to be set by the project developers themselves. As stated in the Kyoto Protocol and the Marrakesh Accords, a CDM project activity has to contribute to sustainable development, i.e. a project activity has to over-perform the baseline case or minimal standards<sup>57</sup>. The self-set sustainable development goals would not be a purely voluntary commitment because the project developers would be required to present a sustainability strategy to the DNA, but the project developers could determine the most appropriate strategy themselves in dialogue with their stakeholders. Leaving the interpretation of sustainable development fairly open provides the project developers with greater freedom of action. It encourages project developers to shape the definition of sustainable development by coming up with innovative solutions (see Figure 9) through certification and/or their own sustainable development strategy.



**Figure 9:** Shaping the definition of sustainable development in the CDM context

The DNA, as the counterpart in this evolution, also shapes the definition of sustainable development through guidelines, requirements and criteria (i.e. the minimal standards). The current legislation of a country can form such a minimal standard.<sup>58</sup>

<sup>57</sup> For instance, a host country is free to consider all project activities as contributions to sustainable development which are in line with current legislation without any further sustainability strategy required. This is, however, based on the assumption that the legislation is so well developed that all legal economic activities in this country can only contribute to sustainable development. Such a decision would promote a compliance mentality among the project developers, which is not conducive to proactive sustainability management.

<sup>58</sup> Yet, as national legislation is neither operational nor enforced in many non-Annex I countries, Thorne and Raubenheimer (2001) come to the conclusion that these minimal standards for CDM project activities are virtually absent. (Thorne and Raubenheimer, 2001)

On top of the current legislation, a DNA can define sustainable development criteria or requirements for CDM project activities to create minimal standards. The DNA can link them to the national priorities. Still, it has to be examined how restrictive these should be in order to prevent the exclusion of valuable project ideas. Thus, a DNA should provide minimal standards and further instructions for project developers, but should not determine in detail how a project activity should contribute to sustainable development (no *dirigisme*).

Further inputs can come from NGOs, stakeholders and buyers at national or international level. The UNFCCC has so far not been involved in sustainable development aspects of CDM project activities as the Parties are sovereign to decide upon these issues. However, an *emergency brake* in form of sanctions for cases of extensive damage to sustainable development would be desirable to strengthen the position of stakeholders and NGOs (e.g. to be executed by the EB). Under these conditions, a public control over project activities could be exercised.

Self-set sustainable development goals go together well with business spirit because the company decides itself what to do and is responsible for the outcomes at the same time. Due to this combined approach of minimal standards and self-set goals, there is a potential for:

- cost-effective contributions to sustainable development (as the project developers choose what to implement),
- less resistance from the business community (as project developers have greater freedom of action than under strict regulation) and
- enhanced learning on sustainable development (sustainability management and stakeholder dialogues).

Of course, the achievement of the self-set goals would have to be monitored and verified by an institution (e.g. a DOE); otherwise, the incentive for fulfilment is missing.

Concrete criteria, indicators and methods are highly dependent on the context and the conditions (Knoflacher et al., 2003) and have to be determined for each case individually. However, following procedural rationality, approaches are needed which describe how to define sustainable development and formulate strategies, guide during implementation and provide the data needed to evaluate thoroughly the contribution to sustainable development of CDM project activities. Therefore, the approaches should satisfactorily take into account different views and concepts.

## 5.2. Conceptual framework of this study

In this subchapter, insights from the theoretical considerations are applied to develop guidelines and a sustainability management approach for CDM project activities. This is intended to help project developers to clarify their concepts and to define the strategy as well as to guarantee that the DNAs obtain the data they need for evaluation.

### 5.2.1. Ten sustainable development guidelines

Guidelines are needed to prevent arbitrariness (Arnold et al., 2001a) when project developers define their own sustainable development strategy and when DNAs evaluate the CDM project activities. Due to the complexity and diversity of sustainable development, no comprehensive set of guidelines exists for sustainability evaluation (Langer and Schön, 2002). Still, based on a review of the respective literature, the following guidelines on how to address sustainable development in CDM project activities were developed within this PhD thesis.

The sustainable development guidelines are not assessment criteria for measuring the contribution to sustainable development of a CDM project activity, but contour the concept of sustainability to provide orientation to project developers and DNAs. Furthermore, the guidelines serve for structuring of the case studies' results.

### **Guideline 1: Holistic perspective**

When dealing with the contribution to sustainable development of CDM project activities, a holistic perspective should be adopted (Hardi and Zdan, 1997) to reflect the complexity of the relationships between people and their environment. Methods used should take into account possible aspects of incomparability and incommensurability between options (Omann, 2004). An interdisciplinary approach is needed to do justice to the different aspects of sustainable development (Hodge and Hardi, 1997). Due to the many interdependencies, sustainability cannot be broken down to components which could be analyzed while isolated from each other. The three dimensions of sustainability have to be examined in an integrative way to take into account cross-dimensional aspects, such as the weighting of the goals, trade-offs and the distribution of benefits. This does not mean, however, that the weighting of the three dimensions has to be equal, although a balance would be the ideal case.

### **Guideline 2: Embeddedness and institutionalization**

The integration of the dimensions also implies that for efficient solutions sustainability management has to be embedded in the organization, i.e. integrated into the core business (Schaltegger and Burritt, 2005; BMU et al., 2007) and daily work routine, i.e. making donations and sponsoring are not the ideal aim of sustainability management. This is a challenge to the management skills of each CDM project developer as the appropriate way is highly company-specific. However, approaches which try to integrate all aspects by expressing qualitative indicators quantitatively and aggregating the results into a single final score often reduce the expressiveness and/or validity of the analysis and are therefore not recommendable. An interdisciplinary and independent team may be needed, who is able to grasp the complexity as well as to analyze and criticize the existing practice.

### **Guideline 3: Scales**

Sustainability management goes beyond the boundaries of the facility. All relevant steps of the value chain (i.e. including upwards and downwards processes) should be covered. Impacts of the entire life cycle (Fichtner, 1998) of a product or service system should be considered. (UNEP, 2005)

Sustainability management should be future-oriented (Schaltegger and Burritt, 2005), i.e. the time horizon has to be long term to include the needs of future generations. This is necessary to be able to anticipate and prevent undesired developments, rather than to simply react and cure them when they have taken place (Hodge and Hardi, 1997). Projections should be based on knowledge of historic and current conditions (Hardi and Zdan, 1997).

The spatial scope should be as wide as practicable to include the needs of the current generations (i.e. at the local, regional, national and, in case of serious global impacts, at international level).

### **Guideline 4: Participation**

The definition of sustainable development should reflect the values of society. It is a social choice which requires broad involvement of the public and the integration of these insights into decision-making (Hodge and Hardi, 1997). Thus, stakeholders have to be involved in the formulation of the sustainable development strategy (Hardi and Zdan, 1997; Schaltegger and Burritt, 2005).

A pluralistic view is needed to find solutions for issues of high complexity and scale which cannot be resolved by a single actor. Post-normal theory recognizes that stakeholders legitimately have different views and that no recipes for action can be applied. Considering the diverse concepts and *Weltanschauungen*, insight into this complexity is gained. Pluralism is considered as a means to reach a better understanding of the issue studied, and group discussions are an essential element. Disagreement during the discussions is understood as part of a dialectical process. Thus, opposition is welcome because it helps to avoid “tunnel vision” (Chen, 1990, 63) and “goal traps” (Chen, 1990, 171). Organizations which systematize doubt can use the benefits of a variety of views (Deutscher, 1977), such as reduced uncertainty and risk or increased acceptance.

Broad participation can prevent dominance of particular interests and empower weaker stakeholders (Kim, 2003). Representatives of the local poor and disadvantaged, as well as NGOs defending the rights of these stakeholders, should be involved (Brown and Corbera, 2003a) not only in the official stakeholder consultation but also in regular meetings and discussions during the different project phases.

Empowerment became a prominent issue for ODA projects. In the context of the CDM, project developers are, however, mainly companies, and a high empowerment of stakeholders, especially of external stakeholders, might come in conflict with the business goals of companies. Finally, the owners of companies dispose of the right to decide as they also bear the business risk. Nevertheless, a regular dialogue (Fichtner, 1998) with external stakeholders is highly recommendable.

#### **Guideline 5: Transparency**

Participation and clear documentation further increases transparency. Long-term impacts of activities to promote sustainable development often depend on whether stakeholders are able to identify with the activities undertaken and are willing to assume their share of responsibility. Project developers should document how the needs and interests of these parts of the population have been taken into account and who is accountable for which outcome. Transparency contributes to the acceptance of the sustainable development strategy and the legitimacy of the activities undertaken by the company/organization. Project developers have to provide comprehensible information on the progress of the project activity and the fulfilment of the sustainable development goals. To involve a broad spectrum of society, an effective communication, i.e. simple wording which can be understood by all stakeholders, is essential (Hardi and Zdan, 1997).

#### **Guideline 6: Operationalization**

To steer and monitor the implementation of the sustainable development strategy, the goal hierarchy and the underlying assumptions have to be made explicit to detect trade-offs. Otherwise, project management runs the risk of inefficient decisions and unmet targets. Assessment criteria have to be fully operationalized to make the project steerable. Therefore, high-quality indicators have to be specified. Operationalization is necessary, but the underlying logic has to be questioned to avoid a blind belief in the deduced outcomes and figures.

The indicators should be specific, measurable, action-oriented, realistic and timed, in short SMART<sup>59</sup> (W.K. Kellogg Foundation, 2004, 17).

#### **Guideline 7: Continuity**

Revolving elements allow for comparisons in time to determine trends, to flexibly respond to changes, adjust the frameworks, goals, and indicators as well as to enhance collective learning. An ongoing assessment is required to understand which activities provoke which outcomes and impacts, how the elements are linked and how the whole system works (Hardi and Zdan, 1997). Systems theory teaches that feedback loops and regulatory circles determine the ability for adaptation (Knoflacher et al., 2003). This is also a means to protect against uncertainties and risks (Omann, 2004).

#### **Guideline 8: Organizational learning**

Organizational change is likely to occur when sustainability management is introduced. If there is no process launched in the company to define sustainable development, to formulate and implement a strategy and, above all, to embed sustainability; i.e. the essential elements and possible assets of sustainability management are ignored. Sustainability management should be understood as a “process of organizational learning” (Fichtner, 1998; Schaltegger and Burritt, 2005, 193). This implies the institutionalization of supportive processes and an appropriate organizational structure: Information flows should be fast and flexible, and hierarchies rather flat. Exchange of information, communication and deliberation can engender a common understanding and social learning. Social learning (Olhoff, 2002) in this context is the improvement of the understanding of sustainable development, i.e. aspects in isolation and in relation to each other. Through the creation of networks (promoted by participation), social capital can be built up.

#### **Guideline 9: Proactive attitude**

Compliance with existing regulation and legislation has to be the point of departure (Fichtner, 1998). The compliance strategy, however, is a passive strategy which does not sufficiently make use of the innovation potential of a company/organization. Under pure compliance, the sustainability concept is not internalized by the organization, as sustainable management by definition cannot be completely reactive. By contrast, project developers can distinguish themselves from others through proactive strategies, where they can apply their innovative potential. This includes not only looking for intersections between the sustainability dimensions with regard to the economic activity but also encouraging a stakeholder dialogue to redefine norms in a process of social change (Zabel, 2004).

#### **Guideline 10: Compensation**

Compensatory activities can be implemented to ensure the contribution to sustainable development of a project activity, for instance, if it does not produce sufficient sustainable development benefits and therefore has to make an additional effort, e.g. in form of a social investment plan or a certain percentage of the CERs paid to a sustainability fund. Compensatory activities can also be implemented to counterbalance special defects of a project activity, e.g. unavoidable negative im-

---

<sup>59</sup> The abbreviation SMART is alternatively transcribed in literature as: specific, measurable, achievable, relevant and time bound. For this thesis, however, the definition of the W.K. Kellogg Foundation was chosen because “realistic” and “achievable” describe similar requirements. That the indicator has to be “relevant” can be taken for granted, but that it is “action-oriented” is very important for companies as it highlights the link between indicators and activities.

pacts. This second option should be kept to a minimum, which requires project developers to consider the irreversibility of options right from the beginning (Omann, 2004).<sup>60</sup> In both cases, it has to be ensured that sustainable development is still considered in an integrative way, and not isolated from the other activities, which in fact would not be reconcilable with the concept of sustainable development.

As requested by the Kyoto Protocol, CDM project activities should contribute to sustainable development, i.e. there is no statement made on the sustainability of the organization developing the project activity. The creation of a sustainability strategy for a CDM project activity can certainly have co-benefits for the sustainability management of the company. Nevertheless, the introduction of a company-wide sustainability management approach requires a great effort from management and staff. And it cannot be put into practice as quickly as a project activity is realized. It needs a comprehensive set of instruments and has to be implemented on all three levels of corporate policy – the normative, the strategic and the operative (Freimann, 2004). Therefore, complex approaches such as the SBSC cannot be generally recommended for CDM project activities.

One example of a less complex approach is the SMA. It is intentionally kept simple, focusing on the core elements which are key to a sustainability strategy and which provide the data needed for a sustainability evaluation. The common ground is the structuring of ideas, i.e. the clarification of the underlying concepts, as well as the approach's operationalization.

### **5.2.2. The Sustainability Management Approach**

It has been demonstrated in the sections before that there is no approach which can be applied without objections and without changes by CDM project developers. Nevertheless, basic elements which indeed should be applicable by project developers and should deliver key information to the DNAs were identified. Those key elements will be combined with a preparatory context analysis in the approach called the Sustainability Management Approach (SMA).

The SMA is a tool to develop a sustainable development strategy for a project activity. It is a systematic approach to operationalize goals and to clarify planned activities and indicators. The monitored outputs, outcomes and impacts could be used to support feedback processes and to communicate achievements. The data generated is supposed to facilitate regular audits by external certifiers (e.g. the DNA and/or a DOE). The approach consists of the following elements.

As a first step, a context analysis including a stakeholder analysis and a definition of resources and inputs is to be carried out. Then, the pathway of sustainable development is developed which comprises the definition of the goal hierarchy (from the main goal or goals to sub-goals/preconditions for the main goals), the definition of activities related to the goals specified and the definition of SMART indicators related to the activities. The last step is the discussion of the underlying assumptions to question the elaborated strategy.

---

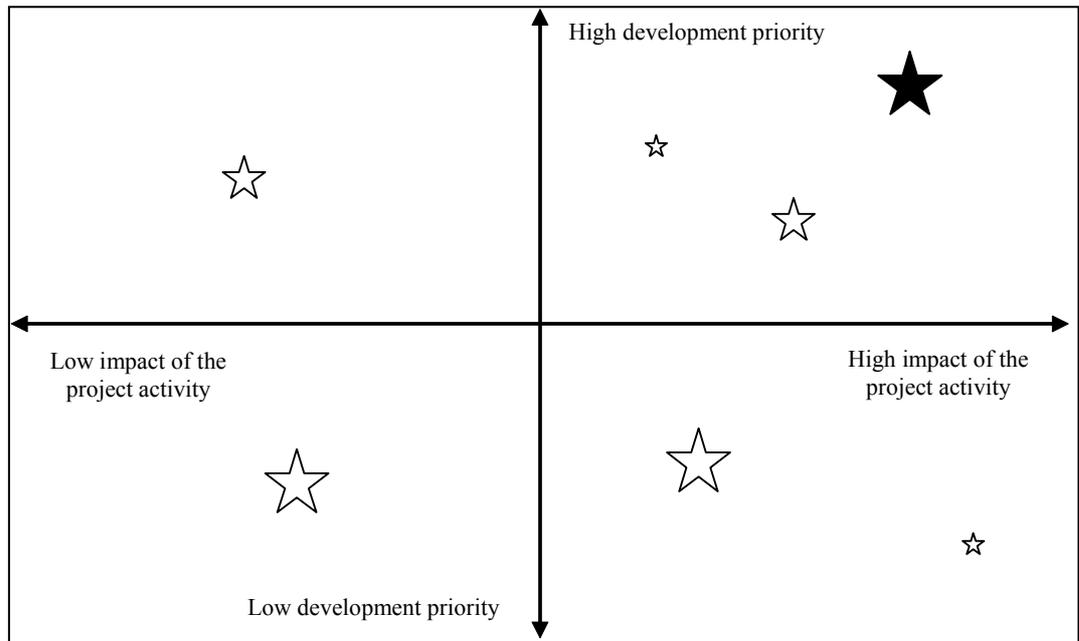
<sup>60</sup> The prevention and precaution principles should be respected, but their practical use is limited: The prevention principle is not sufficiently operationalized, and the precautionary principle contradicts the basic business attitude of venture and pioneering. (Arnold et al., 2001a)

### **Context analysis**

The context analysis covers three main constraints from a business point of view: The policy analysis refers to international, national and local legislation and programmes; the stakeholder analysis aims to involve the people concerned; and the definition of resources and inputs sets the frame for the activities of the project developer.

### **Element 1: Policy analysis**

International and especially national development priorities indicate the dimensions to be considered as they set the frame of reference for company goals and indicators. Relevant legislation has to be taken into account. International priorities are specified in conventions and treaties such as the Rio Convention and the Millennium Development Goals. National priorities are defined, for instance, by local policies and regulations and, in some countries, guidelines of the DNA. If the relative importance of development priorities and the likely impact of the project activity on them can be estimated, the following chart can help project developers to identify the aspects to focus on. The weighting (indicated here by the size of the stars, with the dark colour describing low current performance) of the development priorities should be determined by the stakeholders (see Figure 10).



**Figure 10:** Identification of priority areas of sustainable development

### **Element 2: Stakeholder analysis**

Stakeholders are all those individuals and institutions (organizations, communities, social groups) who affect and/or are affected by the project activity and the corresponding sustainability strategy. A distinction can be made between primary stakeholders (who directly participate in the project activity) and secondary stakeholders (who are indirectly affected by or indirectly influence the project activity and the corresponding sustainability strategy). (Brown and Corbera, 2003a)

The stakeholder analysis comprises the identification of the relevant stakeholders and their needs. Stakeholders have different and often conflicting needs, which is why their understanding of sustainable development is likely to differ. Sustainable development has therefore to be analyzed from different perspectives. The stakeholders and their needs are in a first step to be included when the pathway of sus-

tainable development is defined. At a later stage, the stakeholders and their needs are taken into consideration when the underlying assumptions are discussed.

As stakeholder consultation is mandatory for all CDM project activities, a systematic stakeholder analysis is also supportive for the completion of the CDM project cycle.

The analysis is conducted along the following questions taken from Mason and Mitroff (1981, 43):

#### Identification of stakeholders

1. Who is affected by the project activity?
2. Who has an interest in the project activity?
3. Who is in a position to effect its adoption or execution?
4. Who has expressed an opinion on the matter?
5. Who, because of their demographic or other characteristics, ought to care about the outcome?

A first stakeholder analysis carried out by the project developer can be based on existing knowledge about the stakeholders and their needs. Stakeholder groups can be identified in a brainstorming and the project developer can specify the interests and needs of each of the groups from experience. During this exercise, the project developer has to remember that not all stakeholders might be represented by organizations. Inhabitants who are affected either positively or negatively by the project activity have to be included in the analysis. Nevertheless, to establish a sound strategy, stakeholder needs and interests should be gathered directly from the stakeholders themselves, e.g. through direct dialogue and/or market studies.

#### **Element3: Resources and inputs**

When planning activities to contribute to sustainable development, the available resources and inputs have to be specified, as they set the internal frame for the strategy. At the beginning, it has to be decided whether activities apart from the project activity will be carried out (e.g. a social plan for the area) which would require a certain budget to be specified (e.g. a percentage of the carbon credits the project activity will engender) and/or whether the implementation of the project activity itself will be the contribution to sustainable development.

A rough estimate of the resources and inputs available (for instance, material, pre-products, human resources, budget, e.g. percentage of expected CERs to be spent) is sufficient to formulate the initial version of the sustainability strategy. As the SMA should be applied as a revolving tool, the amount and kinds of resources and inputs have to be continuously refined in order to facilitate planning and to elaborate a credible and complete strategy to the DNA.

#### **The pathway of sustainable development**

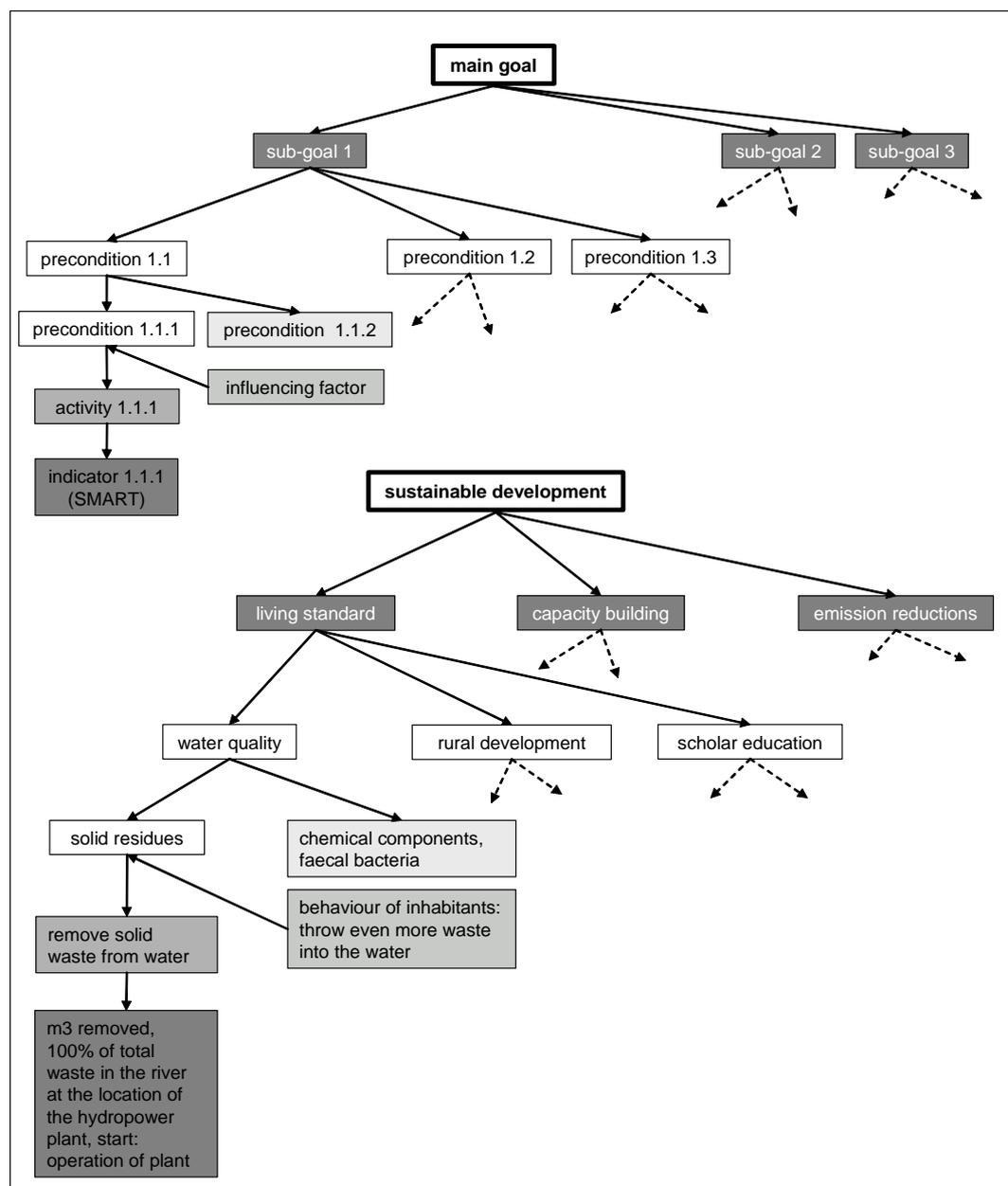
The pathway of sustainable development<sup>61</sup> expresses how to realize a change in the main goal(s). A logic chain is established between the activities (which are specified through indicators), the preconditions and sub-goals leading to the main goal(s) (see Figure11).

---

<sup>61</sup> These elements are strongly based on the logical framework.

#### Element 4: Definition of the goal hierarchy

The goal hierarchy establishes logic connections between goals, sub-goals/preconditions. This is to identify what aspect contributes to sustainable development. It depicts the project developer's concept of sustainability. To construct a goal hierarchy which can lead to a social consensus, the results of the policy analysis and the stakeholder analysis have to be incorporated.



**Figure 11:** Stylized pathway of sustainable development and example

The main goals should reflect the long-term target and the sub-goals/preconditions reflect the mid-term and short-term targets. It is naturally necessary to meet all sub-goals to finally fulfil those goal(s) that rank higher in the hierarchy. All goals are formulated as nouns to facilitate their differentiation from the activities (W.K. Kellogg Foundation, 2004).

After having defined the goal hierarchy, the logical consistency is tested by asking the participants the following questions:

- Do you have questions concerning understanding?
- Are there elements which surprise you?

- Are there elements you think should not be included?
- Please think about what sustainable development means to you. Are there elements missing in the defined goal hierarchy?
- Are the logical connections plausible to you or do you think they could be wrong?
- Could there be goal conflicts which are not depicted?

### **Element 5: Definition of activities**

Activities induce change to reach the goals specified and are therefore expressed as verbs. Although the activities relate to the operative implementation, their formulation has to be geared towards the strategic goals. Each activity should contribute to an upper goal and so forth until the main goal of sustainable development is reached. After having developed the goal hierarchy, the project developers can make out criteria which they can influence. The activities can either be an integral part of the project activity (e.g. jobs created) or additional to the project activity (e.g. equipment for local schools). Existing activities matching the strategy can be included. Influencing factors which are either beyond control or can alter the outcomes have to be specified (W.K. Kellogg Foundation, 2004).

### **Element 6: Definition of SMART indicators**

Indicators have to be developed to steer the processes, to troubleshoot and to demonstrate whether a goal has been achieved or not. The indicators have to be SMART, i.e. specific, measurable, action-oriented, realistic and timed. Furthermore, these indicators have to be elaborated in an iterative process involving stakeholders. Progress has to be measured against a baseline for each indicator. A threshold for each indicator is needed to define when the indicator can be considered as achieved successfully.

The project developer should specify at least one indicator for each activity planned. In the ideal case, further indicators should be determined for the preconditions, sub-goals and finally the main goal(s) to be able to demonstrate progress. This, however, may go beyond the scope of what a CDM project developer can elaborate and monitor. Moreover, the higher the goal, the more difficult it is to quantify the contribution of a single project activity.

Sustainable development indicators are used for monitoring. Nevertheless, an optimal solution is not strived for, as this would be contradictory to the concept of sustainable development.

### **Analysis of underlying assumptions**

#### **Element 7: Discussion of underlying assumptions**

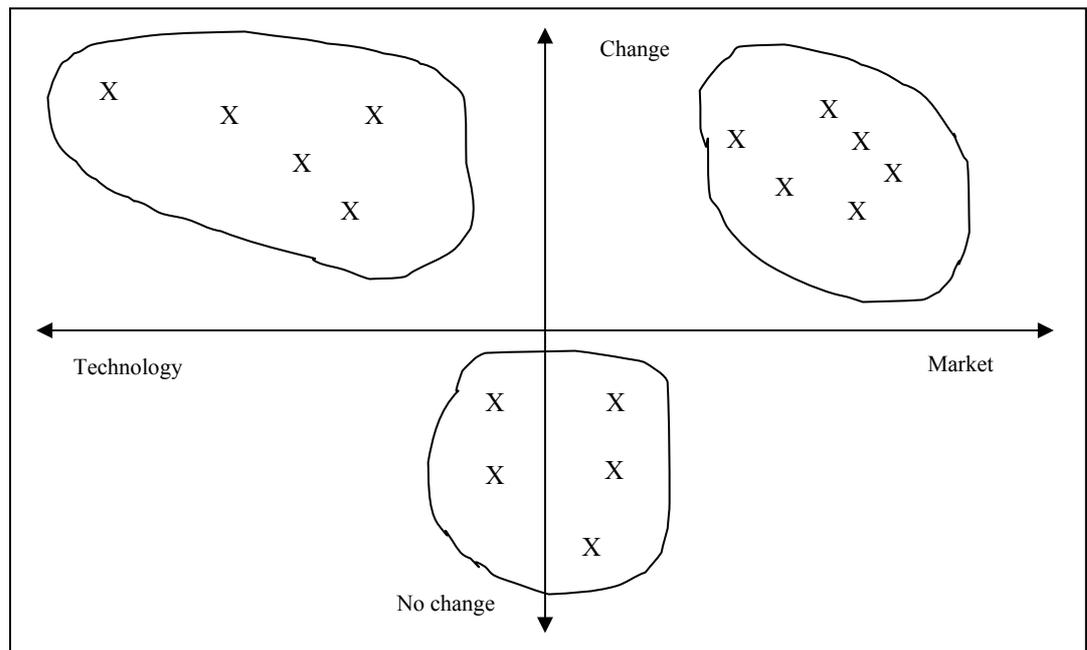
The project developer's strategy to contribute to sustainable development is based on underlying assumptions<sup>62</sup>. This strategy has to be scrutinized to identify possible gaps, errors and weaknesses. These are made explicit by using group dynamics in a discursive analysis. At least two groups have to be formed, one supporting and one opposing the planned strategy. The viewpoints should be convergent inside the groups and divergent between the groups.

If graphical support is needed, the basic differences between the positions to be represented by the different groups have to be identified and the participants should be encouraged to put a score in a chart illustrating their position. For instance, group 1 does not want to implement a new strategy. Group 2 wants to im-

---

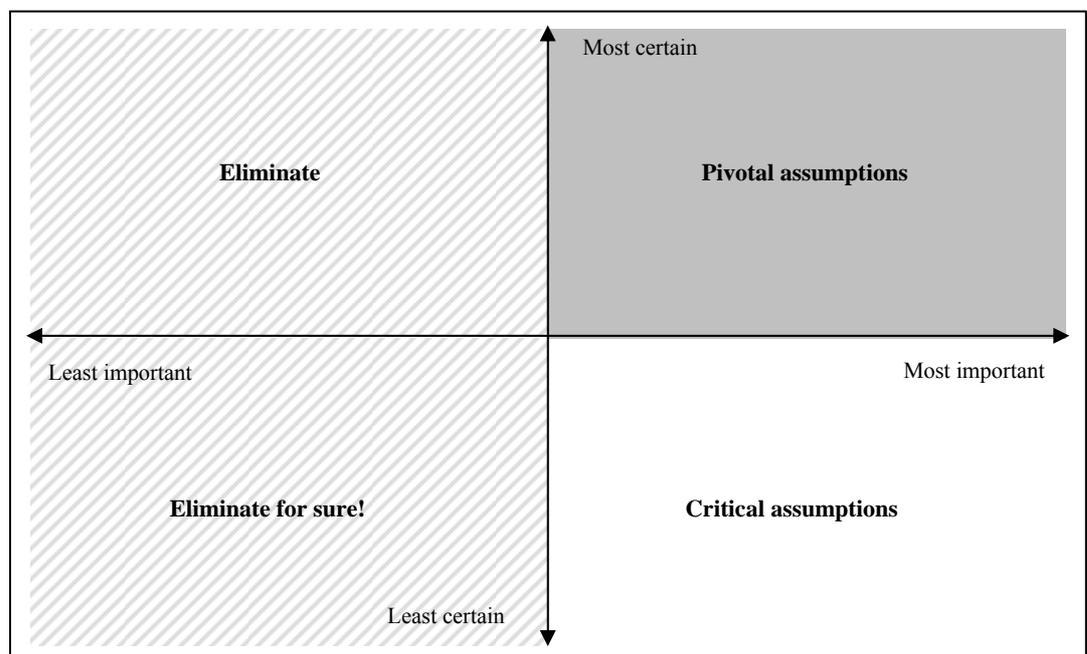
<sup>62</sup> This element is strongly based on the strategic assessment approach.

plement the developed strategy which is technology-driven. Group 3 wants to implement an alternative strategy which is market-driven (see Figure 12).



**Figure 12:** Group formation

The groups are separated to develop assumptions supporting their viewpoints. The assumptions describe how stakeholders are likely to behave. To identify the pivotal assumptions<sup>63</sup>, the assumptions are ranked by each group as illustrated in the following graph (see Figure 13).



**Figure 13:** Assumption rating (Leeuw, 2003)

<sup>63</sup> The number of pivotal assumptions which is manageable for the next step of the SMA is about six to eight.

The two questions to ask for each assumption are:

- How important is an assumption regarding the success or failure of the strategy? Take each assumption and negate it (counterassumption). Would this have a significant bearing on the strategy?
- How certain are we that the assumption is justified?

Assumptions of high importance but low certainty can show a strategy's points of weakness. Assumptions of low importance are discarded from the list.

Finally, the groups present and defend their strategy, basing their argumentation on their pivotal assumptions. The aim is to make all participants understand the argumentations of the other group(s). To reach consensus, the assumptions are negotiated between the groups, which can include the reformulation of assumptions. As a result, a (partial) agreement or disagreement is achieved. If consensus is reached on an assumption, it becomes a premise/presumption of the sustainable development strategy. If no agreement can be reached, further steps to overcome these differences have to be taken.

The discussion of underlying assumptions is a discursive element applied by the project developer to scrutinize the sustainability strategy. Its objective is to promote a spirit of auto-criticism to detect gaps or illogical structures and to anticipate weaknesses of the strategy. It helps the project developer to prepare for the stakeholder dialogues and consultation, and can even be used during the stakeholder dialogues and consultation to conduct a structured discussion about the sustainable development strategy.

The SMA should be applied as a revolving tool which should accompany the project activity during the entire life cycle. Depending on the project stage in which the SMA is applied, different aspects may come into focus: Projects during the planning phase have to develop an initial strategy which should be explicit and watertight, while projects during the implementation or operation have to make sure that everything is on track and whether the initial planning is still adequate. Project developers should be able to apply the SMA already at the very start of a project activity for the purpose of structuring ideas before involving the stakeholders. With a rough strategy in mind, the stakeholder dialogue could then be better steered. The pictorial character of the SMA should facilitate the communication of the concepts and the strategy inside project developing company/organization, to the stakeholders as well as the DNAs and the DOEs. It is the aim to reach a common understanding and to jointly elaborate a sustainable development strategy. The SMA should help to evaluate whether the strategy is convincing (during validation phase) and whether the intended outcomes could be reached (during the verification phase).

A definition of sustainable development should never be understood as final. During the whole process of formulating a sustainable development strategy, the definition of sustainable development is likely to change due to the consensus building with stakeholders and the learning process. In the long run, the understanding should become more and more refined and a corporate definition of sustainable development should be built. Changes to the initial strategy should be possible, as long as they improve the concept and do not make the quality suffer (which has to be determined in the course of the stakeholder dialogue).

## 6. Conclusion

Sustainable development has become a constituent part of economic and environmental policy in industrial and many developing countries. Increasingly environment management systems and sustainability management systems are being implemented. Initially mainly operative, these approaches are becoming more and more integrated into strategic management. There is a variety of instruments available to incorporate ecological and social aspects into the conventional management focusing on the economic part, for instance, the SBSC. However, most of the instruments focus on ecological aspects without paying due attention to social aspects, efficiency aspects and, finally, to the integrative consideration of the economic, ecological and social goals.

Sustainable development is context-specific and therefore can be interpreted in so many ways that the concept might be perceived as vague and therefore meaningless. In the worst case, it could deteriorate to a simple catchphrase (Hopwood et al., 2005). International and national frameworks are necessary to provide orientation for the formulation of sustainability strategies, as well as for the evaluation of sustainable development (Hardi and Zdan, 1997, 57). General guidelines and assessment procedures for sustainability evaluation are favourable for standardization; however, methods, criteria and indicators are dependent on framework conditions and are context-specific (Knoflacher et al., 2003). Above all, the question as to how to achieve the targets cannot be answered in an international declaration. This leads to the conclusion that further interpretation of sustainability in each case is needed. Ethical and ideological concepts of the society are reflected in its interpretation of sustainability. The strategic as well as ethical implications of sustainability form the guiding principle, but there is no single operational definition.

Nevertheless, the procedure of how to define sustainable development and how to elaborate an evaluable sustainable development strategy can be standardized more easily. The ten guidelines should provide orientation on the topic of sustainable development to the project developers and the DNAs. The SMA pools the seven key elements to elaborate a sustainable development strategy. This should guide the project developers and help them focussing on the essential points.

## Chapter III – Research methods

This chapter explains the research methods and their application to the research questions of the study. The overall purpose is to make the reader understand how the findings were derived.

Which approach would be suitable to assist DNAs in overcoming their dilemma?

- Part I addressed the business side: Is the SMA applicable in practice, i.e. does it assist project developers in elaborating their concepts and strategies?
- Part II addressed the policy side: Do the DNAs consider the SMA worth applying?

The following chart (Figure 14) illustrates the research design, which is then explained in the following sub-chapters.

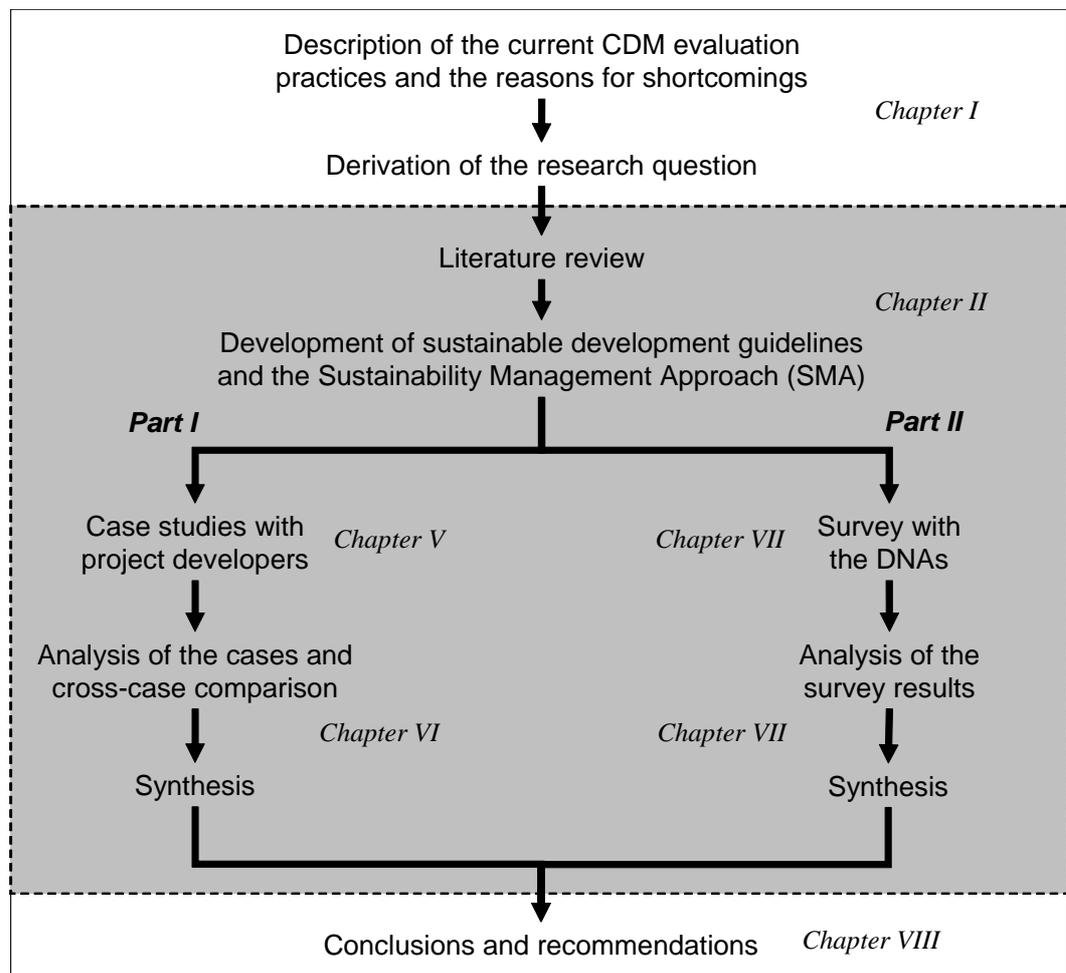


Figure 14: Research methods

### 1. Selection of methods

#### 1.1. Literature review

The literature review in the previous chapter showed that management theory (perspective of the project developers) and evaluation theory (perspective of the DNAs) have some common ground. As a consequence, these two streams had to be integrated into the design of an approach which is acceptable to both project developers and the DNAs, i.e. the approach derived has to match the requirements

of the project developers as well as those of the DNAs. Therefore, an empiric study was undertaken to analyze the suitability of the approach. The empiric study was divided in two parts.

## 1.2. Part I: Case studies

The SMA was designed to be applied by the project developers. To analyze the application of the SMA and to receive feedback from the project developers, case studies were chosen as research method.

To obtain a holistic view on the application of the SMA, interpretive (Neuman, 2006) case studies following an inductive approach were used, which are especially suitable to understand complex phenomena in their context (Yin, 2003). The decisive advantage of case studies is their richness of detail.

The case study approach allowed an insight into the current practices of project activities. It was further possible to learn how project developers deal with sustainable development and to include feedback from them in order to design an approach responding to their needs. In addition, the results of the case studies provide project developers with crucial information on the application of the SMA.

The method chosen belongs to processual research (Hinings, 1997). The concept of sustainable development has been widely discussed; but, if not applied to real situations, this discussion runs the risk of becoming an academic exercise. The research questions required an explorative analysis in the field to test and improve the design of the SMA. Its application in the case studies provided insights into its appropriateness and adequacy. This shows that the case studies were of exploratory nature: The aim was to analyze whether and how the developed approach, i.e. the SMA, could be applied in companies. The case studies were a comparative snapshot, i.e. multiple case studies for the purpose of cross-case comparison at one point in time. Longitudinal case studies and pre-post case studies were not feasible due to the short history of the CDM, but are an option for future research.

Case studies are often not the first choice for scientists due to possible bias. To exclude all types of bias, scientific-experimental models are often preferred. However, they can only be implemented in a laboratory. In field experiments, a true random selection is not feasible. Therefore, research can only satisfy the requirements for a quasi-experiment, but even these are often not feasible. For this study, (quasi-)experiments could not be carried out due to the following reasons:

- Participation had to be voluntary,
- Way to deal with sustainable development was highly case specific,
- Control over behavioural events was not given,
- No valid control group could have been built,
- Histories and archival information were not yet available.

The most comprehensive alternative to (quasi-)experiments would have been to conduct a survey among the project developers of registered CDM project activities, as their contact information is openly accessible on the UNFCCC CDM website. However, this alternative was not chosen due to the following reasons:

- The response rate of such a survey was estimated to be very low. Once having the project activity registered, the interest of the project developer in additional, non-obligatory measures was estimated to be low as there were no direct incentives.
- Furthermore, it would not have been possible to apply the SMA, e.g. to discuss the concept of sustainable development, as a survey would have been a

one-way research instrument which would not have allowed for an exchange of ideas.

- As a consequence, it would not have been possible to explain the SMA in detail in a survey, as no illustrative examples were available because the SMA was to be applied for the first time.
- Finally, language problems could also have impeded a survey among project developers, as not all were expected to be fluent in English.

### 1.3. Part II: Survey

Instead, the current practice in the host country and the feedback on the SMA by the DNAs could be approached in a worldwide survey among all DNAs (i.e. the world comprised 117 DNAs as of 11 January 2007). It could be assumed that the DNAs as the official contact for the CDM in their country were able to provide feedback on the elements of the SMA. These questions could be approached by a survey as they did not have to judge upon the applicability in the field.

The contact data was available at <http://unfccc.int>. To increase the response rate and to enhance the expressiveness of the results, the survey was carried out in form of telephone interviews allowing for clarifications and ensuring complete data sets.

Furthermore, by means of the survey, the focus of the study could be extended from a single country to more countries. This was motivated by the understanding that an approach has to match existing procedures and correspond to the needs of the different countries, if it should be applied in practice.

## 2. Quality of the research design

The quality of research is determined by its objectivity, validity and its reliability. Objectivity describes the independency of the research results from the researcher (Diekmann, 2007). Validity refers to precision in measurement, i.e. whether the phenomenon to be measured is covered fully (Burns, 1994). Three main errors can generally manifest themselves: A correlation is seen where it does not pertain, a correlation is denied where it pertains, or the wrong questions are asked (Flick, 2005). Reliability is given when a certain research technique delivers the same results, if repeatedly applied to the same object of analysis (Burns, 1994).

### 2.1. Objectivity

Objectivity was considered through standardization by using case study and survey guidelines. In addition, detailed documentation and the creation of a database enhanced objectivity.

### 2.2. Validity

According to Yin (2003), four types of validity are commonly used to demonstrate the quality of empirical social research.

#### 2.2.1. Construct validity

Construct validity is given when a particular operationalization measures the construct it claims to measure, i.e. subjective judgments by the researcher are avoided (Yin, 2003; Diekmann, 2007).

### **Case studies**

To create a chain of evidence, the ideas which came up during the direct interviews and group discussions were carefully documented during data collection. Original material such as charts and field notes was retained. The researcher further insisted on explanations by the interviewees regarding their reasons for selecting an answer during the interview or for making a decision during the group discussions (Yin, 2003). Convergent results were associated, while inconsistent results were not merged into a single measure (Neuman, 2006). Furthermore, the consolidation of the sustainability strategy was reviewed by the project participants during the case studies, and the case study reports were reviewed after the conclusion of the fieldwork (Flick, 2005). All feedback obtained was incorporated into the analysis. Thereby, potential misunderstandings could be eliminated. Holistic fallacy<sup>64</sup> was prevented by purposefully looking for data outliers during data analysis. To a certain extent, construct validity could be increased by the use of multiple sources (e.g. results from interviews/group discussions vs. results from observations) (Yin, 2003).

### **Survey**

Validity was enhanced by conducting a semi-structured interview as this offered room for explanation and clarification. Based on this data, convergent results were associated, while inconsistent results were expressed by separate measures (Neuman, 2006).

Taking into account that phone interviews are more prone to misunderstandings, the researcher assured correct mutual understanding by repeating the questions, if necessary, and, when taking notes, by reading back the notes taken to the interviewee. The researcher also insisted on explanations by the interviewee regarding the reasons for selecting an answer to further prevent misunderstandings. Subsequent to the transcription, the data collected in the interview was sent to the participant for feedback (Flick, 2005). All feedback received was incorporated into the analysis. A proven method, the qualitative content analysis, was used. Holistic fallacy was prevented by purposefully looking for data outliers during data analysis (Yin, 2003).

By ensuring confidentiality to the participants and not using tape or video recording, the researcher intended to enhance the accuracy of the answers provided. The day and time of the interview was set by the interviewee to accommodate interviewees.

### **2.2.2. Internal validity**

Internal validity refers to the causal relationships established by a study. Third factors which might influence the outcomes have to be excluded.

### **Case studies**

Internal validity is a concern of causal (explanatory) case studies. However, the case studies in this study were mainly of exploratory nature. The aim was to apply the SMA in the field to find out:

- Whether there were any difficulties with its application
- What caused these difficulties
- How did the application of the SMA lead to new insights and
- How did it influence the concepts of the project developers

---

<sup>64</sup> Holistic fallacy describes the interpretation of results as more congruent as they are.

To insure internal validity, new ideas were carefully documented. Original material such as charts and field notes was retained. As the case studies were conducted within a few days only, a direct before-after comparison was possible and major external influences could be excluded.

### **Survey**

Internal validity applies to cause-effect examinations. Yet, like the case studies, the survey was exploratory. The results were tested for contingencies but with the aim to be able to generalize the findings with regard to the non-participating DNAs (see external validity).

### **2.2.3. External validity**

External validity describes whether the findings can be generalized to other contexts (e.g. other people, places or times). A distinction has to be made between statistical and analytical generalization. Statistical generalization is given if the sample has been selected correctly. Analytical generalization is based on theory, which is tested through replication of the findings.

### **Case studies**

Three case studies were conducted for the purpose of replication (triangulation of data sources) to allow an analytical generalization. Statistical generalization could not be achieved due to the small sample size. The three cases studied were all located in one country.<sup>65</sup>

### **Survey**

Due to the small universe of the DNAs (117 entities), statistical methods could not be applied for generalization. The entire universe was included in the study, which is why only the problem of non-response or declined participation had to be addressed. By searching for contingencies between DNA characteristics and answers provided, the researcher tried to discover a pattern which could be used to estimate what the non-participants would have answered. Several techniques were used to increase the response rate (see section 5.2.2).

## **2.3. Reliability**

Reliability is given when a certain research technique delivers the same results, if repeatedly applied to the same object of analysis. The more standardized a method is, the more the data collected can be considered reliable. The aim is to minimize error and bias of the study (Cooper, 2001).

However, qualitative field research is difficult to replicate: The context would be different as participants would already know about the study and group dynamics as well as the interaction with the researcher would not take place in the same way again. In this case, an applied method usually neither leads to stereotypically repeated results (as perspectives differ from case to case), nor to constant results in the course of time (as phenomena can be subject to change). One possibility to demonstrate reliability – if applicable – is triangulation by method. Another alternative is procedural reliability referring to the way data is collected, documented and analyzed. (Flick, 2005; Neuman, 2006)

---

<sup>65</sup> The assumption of this study is the country context is irrelevant for how project developers perceive the SMA. The country context is, however, likely to influence the content of the sustainability strategy.

### Case studies

Interview and discussion guidelines were used to achieve reliable results (the interview questions were pre-tested<sup>66</sup>). These guidelines specified the field procedures and questions of each case study. Subsequently, data was documented in a database. Interpersonal bias could be excluded as the research was conducted by one person only, i.e. the interviews and group discussions as well as data coding and analysis were carried out consistently.

### Survey

Reliability was enhanced by the use of a (pre-tested, see Annexe 2) semi-structured questionnaire which was filled in by the researcher while conducting the interview. Subsequently, the data was input into a standardized survey database using the software SPSS. Furthermore, the survey was carried out by one researcher, which excluded interpersonal bias between researchers, i.e. variation in the administration of the survey. The survey languages were English, Spanish and French. Two interviews – one in Russian and one in Japanese – were conducted with an interpreter (in a three-party conference call) which ensured that the interview could be steered by the researcher. Nevertheless, the interpreters were also trained and prepared for eventualities during the interviews to prevent misunderstandings and to guarantee the organic flow of the interview.

## 3. Variables

Conceptual definitions describe the primary elements of a research topic, drawing on other concepts. However, conceptual definitions are not operational, i.e. they are difficult to measure. Therefore, operational definitions are needed which should be strongly linked to the conceptual definitions. An operational definition describes a concept by one or more specific observable and measurable conditions, characteristics, behaviours or events. It has to be further explained how the concepts can be observed and measured. Operationalization usually has direct impact on the research, mainly the findings. Operational definitions should be complete, valid and understandable.

Conceptual definitions	Operational definitions
	<b>Case studies</b>
Utility of the SMA	The utility of the SMA consisted in a stepwise implementation following the case study guideline (see Annexes 1.1 and 1.2).
Different characteristics of participating companies with regard to formal aspects, their knowledge and experience, management practices as well as attitudes and perceptions	The company types were characterized by the following features, which resulted from the initial interviews: <ul style="list-style-type: none"><li>o Formal characteristics: stage of project activity, size of project developer, technology of the project activity, size of project activity, private or public business, the company's hierarchical structure, the company's planning horizon, feedback loops and quality management, and the company's concept of a learning organization.</li><li>o Knowledge and experience: the company's knowledge about legal aspects and political programmes, the company's knowledge about SD criteria or recommendations by the DNA, the company's knowledge about the three pillars of SD, the CDM Gold Standard, the</li></ul>

<sup>66</sup> The guideline for the initial interview of the case studies with the project developers was pre-tested with a manager from SolarWorld AG, Bonn. This company was selected because of its orientation towards sustainable development (it is a producer of renewable energy known for its social commitment). The pre-test led to improvements of the sequence, wording and number of questions. For further details, refer to Annexes 1.1 and 2.

	<p>MDGs, the company's experience with EIA, and the company's knowledge about procedures of stakeholder consultations for the CDM.</p> <ul style="list-style-type: none"> <li>○ Perception of goals: the main company goals, the company's understanding of the relation and interdependencies of the CDM goals and the company goals, the company's understanding of the achievability of the two CDM goals, expectations regarding the CDM, and the company's management of goal conflicts.</li> <li>○ Operationalization under sustainability aspects: the company's optimization of CDM project activities, the company's knowledge of management systems, and the company's monitoring of SD.</li> <li>○ Existing concepts in the company: the company's knowledge about the conceptual debate on SD, the company's attitude to the process to define sustainable development, the company's attitude to the scope of criteria needed and to the use of either general or specific sustainable development criteria, the type of criteria needed, and the company's attitude to whether the DNA should define SD criteria for CDM project activities.</li> <li>○ Attitude towards a team in the company dedicated to SD: the company's attitude to whether and why an independent and interdisciplinary SD team is or is not necessary, the current status (team established or not), and the facts whether the company considers SD a matter for the management.</li> <li>○ Attitude towards and knowledge about stakeholder participation: stakeholder involvement considered problematic or not by the company, participation at which level needed according to the company, identification of stakeholders (process) applied by the company, identification of stakeholder needs (process) applied by the company, internal stakeholders identified by the company, external stakeholders identified by the company, current procedure used by the company to involve stakeholders.</li> <li>○ Company's management of outcomes of the project activity</li> </ul>
Enrichment and systematization delivered by the use of the SMA	The enrichment and systematization manifested themselves in the development of ideas documented during the application of each of the elements of the SMA in form of notes taken by the researcher, charts and tables developed, and notes of the participants. A before-after comparison was made.
Appropriateness describes whether the project developers could use the elements as described or whether they encountered difficulties with the elements of the SMA or could not use them at all	The appropriateness of each of the elements of the SMA was assessed along the comments made by the participants and the observations of the researcher regarding participants' difficulty in performing a task and insecurity, such as nervous gestures, thinking aloud, vague answers, no results delivered, handing the task over to other group members or asking for help on how to carry out a task.
Steps towards reaching the sustainable development guidelines developed for the SMA	The steps towards reaching the sustainable development guidelines were analyzed along the strategy elaborated by the project developers. It was examined which characteristics, specified for each guideline, were taken into account by the strategies. In addition, the reasons why some ideas were discarded were analyzed.
<b>Survey</b>	
Political and regional affiliation	○ Division into Annex I/non-Annex I Parties following

of the DNA	<p>the operational definition in Article 1 of the Kyoto Protocol<sup>67</sup>. Non-Annex I Parties are therefore all those Parties not included in the Annex I of the Convention.</p> <ul style="list-style-type: none"> <li>○ Furthermore, the DNAs were classified along their regional group based on the UNFCCC’s classification of the Parties into the main world regions Africa, Asia-Pacific, Latin America and the Caribbean, Eastern Europe, Western Europe and others, and those belonging to none of these categories.</li> </ul>
Experience and active involvement of the DNA	<ul style="list-style-type: none"> <li>○ The number of project activities the DNA had already dealt with.</li> <li>○ How actively the DNA managed its reach (via website, other sources).</li> </ul>
Current evaluation practice in the country	<ul style="list-style-type: none"> <li>○ Three categories of approaches were identified: first, a specific (analytical) approach, second, sustainable development criteria and requirements and/or third, sustainable development guidelines and recommendations. Moreover, it was checked whether these approaches were obligatory or voluntary and who should apply the approach. Interviewees had to classify and explain their approach.</li> <li>○ Furthermore, the DNAs were asked for each of the seven elements of the SMA separately, whether the DNA used it already for CDM project activities or not.</li> </ul>
Utility or helpfulness of the SMA perceived by the DNAs	<ul style="list-style-type: none"> <li>○ The DNA’s valuation of each of the seven elements of the SMA, asking whether the element was considered useful and to whom.</li> <li>○ The DNA’s valuation of the SMA as a whole, asking whether the interviewee would recommend the SMA and whether the interviewee would use the SMA.</li> </ul>

**Table 1:** Conceptual and operational definitions of variables

## 4. Sample

### 4.1.1. Case studies

The selection of the case studies was theory-driven. The regulatory framework and the local market conditions were considered as external factors of the SMA. The first aspect considered was comparability among the cases. The research focused on one sector (hydroelectricity) in one country (with CDM experience), which reduced the diversity of external influences faced by the project developers. Peru was selected from the list of non-Annex I Parties. The case studies were carried out in Spanish.

A personal contact was established to the DNA and to the national focal point of climate change. This was decisive as the participation of project developers was voluntary and the contact data of unregistered project activities was not openly available. The contact to the project developers was therefore established by an intermediary. Three cases were chosen, because three cases allowed for triangulation and could be implemented by the researcher under the given financial and time constraints.

<sup>67</sup> “‘Party included in Annex I’ means a Party included in Annex I to the Convention, as may be amended, or a Party which has made a notification under Article 4, paragraph 2(g), of the Convention.”

The cases were heterogenic with regard to the following characteristics:

- **Stage of project activity:** The receptivity to the SMA may differ according to the stage of the project activity. Before the registration as a CDM project activity, but especially before the DNA approval, the interest in demonstrating the contribution to sustainable development of the project activity was estimated to be rather high. After approval, the interest of the project developer is likely to decrease if he is not generally interested in sustainable development and/or does not plan to realize further project activities. One of the project activities had already been registered (Case A), while the other two project activities were in an initial phase and still required the approbation of the host country when the study was carried out (Case B and C).
- **Size of project developer:** The size of the project developer could influence the implementation of the SMA. Small- and medium-sized companies could run into difficulties with the adoption of a holistic strategy, because the market conditions offer less room for manoeuvre and the financial framing conditions as well as the company's own conditions of implementation are more limited. For instance, micro businesses could lack internal variety for discussion (Arnold et al., 2001a). By contrast, bigger companies could find it difficult to implement the SMA due to complex and hierarchical structures as well as slow information flows. Case A was a micro enterprise, Case B a mid-sized company and Case C a larger company.
- **Size of project activity:** The size of the project activity could affect the extent of the contribution to sustainable development. One possibility is that small-scale project activities generate more sustainable development benefits than big project activities as they are often decentralized and better embedded in the community. On the other hand, bigger project activities could have more resources to invest in sustainable development. One project activity was of small scale (Case A) and the other two (Case B and C) were of regular scale.
- **Private/public:** Private and public companies often have structural differences which manifest themselves, for instance, in the level of hierarchy as well as the speed of information flows and decision taking. The company of Case A was private, while the other two companies were public in process of privatization (Case B and C).
- **Technology:** Some technologies could have more inherent benefits for sustainable development than others could. All three project activities produced hydropower and were therefore similar, but they all implemented different technologies: small turbines for generation of run-of-river hydroelectricity (Case A), turbines in caves for generation of hydroelectricity (Case B) and construction of a transmission line (Case C).

It was assumed that these case studies could be generalized to reflect the business perspective of project developers who were open to sustainability management and who acted in a market economy. The assumption was that basic business spirit did not differ considerably between countries and sectors.

#### 4.1.2. Survey

The survey addressed the entire universe of 117 DNAs; therefore, no sampling had to be undertaken. 80 DNAs voluntarily participated in the study.

### 5. Data collection methods and procedures

The purpose of collecting data was to analyze the attitudes and perceptions of the project developers on the one hand and the DNAs on the other. The research

methods also reflect these two sides considered in the study: the business side represented by the project developers and the policy side represented by the DNAs. The business side was examined through case studies implemented in the field (part I of the study), while the policy side was examined through a worldwide survey among all the DNAs (part II of the study). As attitudes, perceptions and concepts were analyzed, the majority of the data collected was qualitative. It allowed the researcher to get a complete view, to understand the motivations of the participants from an insider perspective and to enhance the validity of the results. Qualitative data allowed exploring a new field and accommodating dynamics more easily. (Lin, 2002)

## **5.1. Data sources**

The next section gives a detailed description of the data sources used. For the case studies as well as for the survey both primary and secondary data sources were included.

### **5.1.1. Primary data sources**

#### **5.1.1.1. Semi-structured in-depth interviews**

Semi-structured in-depth interviews (Yin, 2003) are guided conversations and not structured queries, i.e. they contain open-ended questions relating to facts and opinions. The constant line of inquiry was guaranteed by the use of an interview guideline. Interviews were conducted with the project developers during the case studies.

The questionnaire was designed based on the theory of Bradburn et al. (2004). The order of questions was established with the aim to make the interviewee comfortable with the interview situation. The questions were phrased in a way to make the interviewee feel comfortable, prevent misunderstandings and obtain valid results. These concerns were also addressed during the pre-test.

The design of the interview guideline allowed for a smooth flow of conversation. The open questions helped the researcher understand the practices and mindsets of the project developers. It also prepared the interviewees for the subsequent sessions, calling their attention to topics related to the CDM and sustainable development as well as familiarizing them with the way the interview enquired about their perceptions, needs and concepts.

#### **5.1.1.2. Focused discussion**

The strengths of the focused discussion (Flick, 2005), either with an individual or in a group, are that a better understanding of the complex concept of sustainability can be achieved and that several alternatives can be discussed. Potential problems are solved jointly and creatively. This process leads to a clarification of values and trade-offs, as well as an identification of contentious issues.

Focused discussions were carried out in the context of the case studies. People were eligible to participate if they belonged to the company and were involved in the CDM project activity. The participants were invited by the main contact person of the respective company, and participation was voluntary. Participants of the case studies were all managers of the respective companies, as the employees and workers were not actively involved in the CDM project activity. An official meeting was scheduled, which all participants attended. The focused discussions were organized in the companies of the project developers. The task of the researcher was to lead the discussion in the position of a participant-observer and facilitator.

The discussion guidelines consisted in a description of the planned steps and information on how to carry them out.

#### 5.1.1.3. Participating observation

As stated above, the researcher also took the role of the participant-observer during the case studies (Flick, 2005). Behaviour (e.g. facial expressions, gestures) was recorded as it occurred, which helped to complete the information of the interviews and discussions.

#### 5.1.1.4. Phone survey

A survey (Neuman, 2006) is an adequate methodology to capture attitudes or patterns of past behaviour. For this survey, the cross-sectional design was used to illustrate the current conditions of the CDM and the perceptions of the DNAs regarding the SMA.

To reduce the problem of incomplete data sets, the author decided to carry out the survey as semi-structured phone interviews. This ensured that all questions were answered (with some very few exceptions when the participant declined to answer or was not able to answer), and that comments and clarifications could be made, which enhanced the data quality; this is an advantage of phone surveys. A questionnaire which was filled in during the phone interviews served as survey guideline (see Annexe 7.1).

The order of the questions reflected the three main parts of the survey: First, general questions regarding the status of the CDM in the country were asked. Second, the current practice of the DNA's evaluation of CDM project activities was examined. The third and largest part of the interview addressed the seven elements of the SMA, i.e. whether the interviewee had experience with an element, whether it was already applied by the DNA, and whether the DNA considered it useful (if yes, to whom and why). The final question asked for a comprehensive feedback regarding the SMA as a whole. For this purpose, the interviewees were asked whether they would use the SMA and recommend it to other project developers, always asking for an explanation of their reasons.

Like the questions of the semi-structured in-depth interviews, the questions of the phone survey were phrased based on the theory of Bradburn et al. (2004) with the aim to make the interviewee feel comfortable, prevent misunderstandings and obtain valid results.

As the entire universe of DNAs was included in the survey, the researcher decided to use the first interview of the survey as a pre-test. If adjustments had had to be made, this interview would have been discarded. However, the interview guidelines did not pose any problems during implementation, which is why the respective data set could be included in the analysis.

### 5.1.2. Secondary data sources

Secondary data sources could only be used to a certain extent as the availability was limited. Documents (Yin, 2003) were used for the case studies and as background material for the survey.

In the case studies, the documents most relevant for the contribution to sustainable development of project activities were the PDDs. However, only one of the case study project activities was advanced enough to dispose of a PDD. Due to the small size of this company, no annual reports or website were available. The other two project activities disposed of preliminary reports which focused on emission reductions but did not provide specific information with regard to sustainable development. However, for the corresponding companies, annual reports and web

pages were consulted. These sources offered general background information but only very limited information on the concept of sustainable development by the project developers.

The documents used in the context of the survey consisted in sustainable development approaches, criteria, requirements, guidelines and recommendations published by the DNAs, if available.

Due to the high topicality and the short history of the CDM, data sources such as histories and archival records were not available.

## 5.2. Data collection procedures

### 5.2.1. Case studies

The interviews and discussions were documented by taking notes and by collecting the material the participants developed during the case studies. Tape or video recording were not chosen to offer the participants an atmosphere of free conversation and brainstorming. Moreover, companies are prudent in communicating details on their activities, as the topic of sustainable development is highly political in the context of the CDM and is related to the strategic positioning of the company. Therefore, recording of the interviews and discussions would have reduced the willingness to participate or to respond.

The researcher's main function was that of facilitator: she guided the application of the SMA, e.g. through probing questions, but did not intervene in such a way that she introduced definitions or ideas.

#### 5.2.1.1. First meeting

The first meeting was a one- to two-hour initial semi-structured interview with the main contact person(s), i.e. the project developer(s). The interview started with company-related questions. A general question concerning the perception of the CDM followed for orientation purposes. Afterwards, relevant national legislation and prescriptions regarding EIAs were discussed. These general requirements lead to the discussion of CDM-specific criteria for ensuring sustainable development. As a next step, the concepts of the project developer regarding sustainable development were examined. Having entered into a deeper discussion, the company goals, the relationship to the CDM goals and the way the goals were managed was outlined. This formed the basis for a further discussion about the selected sustainability concepts and approaches to get a deeper insight into the available knowledge and the practices of the company. Participation is a key element for sustainable development, and it was addressed in the subsequent questions. As sustainable development is a dynamic concept to be determined iteratively, the topic of organizational learning was briefly addressed to get an idea of how much this was already an issue for the company. As a final question, the attitude to assuming responsibility of the project developers was evaluated: It was asked how the interviewees would behave in case of positive impacts of their project activity, no impacts, slightly negative impacts and very negative impacts. At the end of the interview, the SMA was briefly discussed (i.e. the elements of the SMA were briefly discussed and room for questions and objections was provided).

#### 5.2.1.2. Second meeting

The second meeting was designed as a focused discussion (for micro companies, between the project developer and the author only; and for regularly sized compa-

nies, as group discussion). Based on the information provided in the initial interview, the sustainable development strategy of the project activity was discussed. After a first concept had been established, national and international sustainable development criteria were discussed: several sets of criteria were presented to the project developers to stimulate their ideas. (The selected sets of criteria are presented in Annexe 3.) These sets of criteria are not all embracing, and other sets of criteria could be used instead. The objective of this step was merely to launch the discussion. The relevance of these international and national development priorities for the respective project activity was discussed with the project developers. They were asked to identify those criteria on which they thought their project activity had an impact. Based on the information gathered, a preliminary version of the pathway of change was drafted.

This procedure was selected because none of the project developers was well informed about the sustainability debate and the policy context of sustainable development. Thus, all participants needed further input to be able to talk about potential sustainable development criteria for the CDM project activity and an open discussion could not be held at that point.

#### 5.2.1.3. In-between the meetings

Based on the information obtained during the first two meetings, the researcher designed the initial pathway of sustainable development (in MS PowerPoint), not yet including indicators.

#### 5.2.1.4. Third meeting

The third meeting was also designed as a focused discussion (again, for micro companies, between the project developer and the researcher only; and for regularly sized companies, as group discussion). It comprised the correction of the pathway of sustainable development. Gaps were filled and the interpretation of statements was verified. Indicators (including timelines) were discussed and specified, where possible. Based on the consolidated pathway of sustainable development, the discussion of assumptions was held.

#### 5.2.1.5. After the meeting

The information gained during this third meeting was then integrated into the pathway of sustainable development by the researcher. The final feedback on the case study was obtained directly and/or via e-mail.

### 5.2.2. Survey

For documentation purposes, the researcher took notes during the phone interviews. As explained above, tape recording was not chosen because this would most likely have reduced the response rate due to the political weight of the topic. The initial questions concerned background information (e.g. experience with CDM, website, other information sources). The first substantial survey question referred to the approach used by the DNAs to evaluate the contribution to sustainable development by CDM project activities. Up to this point, it was assumed that the DNAs would be able to answer the questions without difficulty. The following questions referred to the DNAs' perception of the SMA. To be able to provide feedback regarding this issue, the DNAs had been provided with three informative pages describing the elements of the SMA before the interview (see Annexe 7.2). The target population for the survey comprised all 117 DNAs listed on the website of the UNFCCC as of 11 January 2007. The sample size was the entire popu-

lation (i.e. the 117 DNAs) and a response rate of more than 50% was the target. In fact, 68.4% were reached.

The survey took 12 weeks. The request for participation was sent to the DNAs by e-mail on 11 January 2007. A first reminder was sent on 19 January. As of 24 January, the author started to call up the DNAs which had not reacted to the request. The final reminder communicating the deadline of the survey was sent on 29 March. Further reminders were sent on 2 and 4 April. The survey was closed on 5 April at 12 a.m. GMT.

The author reduced the risk of reactivity by explaining to the interviewees that criticism was very welcome, as the purpose of the survey was to analyze whether the SMA matched procedures and requirements and, if needed, to adapt or refine the SMA.

To secure a higher response rate, the author used the following strategies:

- Confidentiality of the data provided by the participants was promised.
- To further guarantee the confidentiality of the statements made by the interviewees, the interviews were not recorded on tape. As the extent of the open questions was limited, the answers could be put down in writing by the author during the interviews.
- The interview was kept as short as possible. The estimated time was about 20 minutes. However, due to bad phone connections to several countries and language difficulties (e.g. articulation, accent), the interviews took longer than expected. In addition, interviewees could ask clarifying questions, which also increased the time spent. The average time of the interviews was 36 minutes.
- To build confidence, the university logo of the Research Institute for Managing Sustainability, Vienna University of Economics and Business Administration, Austria, was included in the covering letter. This institute is head of the EASY-ECO network (Evaluation of Sustainability: European Conferences and Training Courses). The researcher is a member of this network.
- Participants were provided exclusive information in form of three introductory pages before the interview and a free copy of the final report after the interview and before publication of the PhD thesis.
- An expression of thanks for consideration was included in the request for participation and in subsequent e-mails.
- The request for participation was first sent by e-mail. A courteous reminder was e-mailed to those who had not replied the following week.
- As expected, it was difficult to reach the DNAs by e-mail. Several e-mail addresses failed and alternative e-mail addresses were searched for on the web.
- After two weeks, the author started the follow-up by phone and further e-mails to make sure that the request reached the correct contact person, and that it was taken due notice of.

Due to the choice of phone interviews, some disadvantages of surveys could be reduced: Incomplete or ambiguous answers could be reduced to a minimum as the researcher could insist on and ask for clarifications. Inaccurate information provided by the interviewees due to misinterpretation could also be limited as the researcher could provide clarifications during the interview.

## **6. Data analysis procedures**

Quantitative data was collected to a small extent during the survey, while most of the data collected in the case studies and the survey was of qualitative nature due to the explorative character of the study.

## 6.1. Case studies

### 6.1.1. Content analysis

A wide variety of definitions of content analysis can be found in the scientific literature. This study is based on the definition provided by Mayring (2003). According to Mayring, the aim of content analysis is the analysis of material originating from a kind of communication which has to be recorded in some way. Content analysis is a systematic method, which proceeds following explicit rules (to ensure reliability) and is based on theory (e.g. the research question). The final objective is to draw conclusions from the material on aspects of the study. The basic idea is to define a system of categories to structure the qualitative data. This can be very close to quantitative analysis, e.g., if the frequency of occurrences by category is recorded. In this case, the drawbacks of content analysis would be latent content and context, which is not examined further (Kohlbacher, 2005).

Three basic techniques of content analysis can be distinguished (Mayring, 2003): *Frequency analyses* are the simplest form of content analysis focusing on the frequency of text components used (e.g. single words, phrases). They face several difficulties:

- Ambiguity of words,
- Context relatedness, e.g. with regard to the exact meaning or the intensity,
- Substitutive words and dialectal expressions.

*Valence and intensity analyses* scale a text component.

*Contingency analyses* search for correlations between the appearances of text components. If many such contingencies exist, a pattern may emerge.

Apart from these basic techniques, *qualitative content analysis* pursues to understand the content. Different disciplines (such as communication science, hermeneutics, social research, literary studies and psychology) have further developed qualitative content analysis: It is a dialectical relationship between the consideration of particular aspects and the ostensible appearance, and the holistic approach addressing the far-reaching core content. It is therefore essential to understand the material not in an isolated way, but as an element of its chain of communication (Mayring, 2003).

The analysis of the case study data was processed manually (using MS Excel) due to the small number of cases and the idiosyncrasy of the answers. The analysis aimed first at resuming and second at structuring the data. The ideas which arose during the application of the SMA were recorded in form of written notes of the participants and the researcher. These included text and drawings which illustrated the pathway of sustainable development. The notes were continuously transcribed and translated into charts after the meetings. Further notes were taken by the researcher based on her observations made during the case studies. These steps consisted in the first level of paraphrasing.

To structure the data, the dimensions and characteristics were determined. The dimensions (i.e. the variables) were developed based on theory and geared to the research objectives. This resulted in a system of categories needed for content analysis. The data was then arranged into the respective categories and further paraphrased to obtain the characteristics.

### 6.1.2. Comparative analysis

Based on the paraphrasing and structuring as a result of the content analysis of the data, an analysis of similarities and differences between the case studies was carried out. The comparative analysis was organized following the variables developed.

## 6.2. Survey

To analyze the survey data, the software package SPSS was used.

### 6.2.1. Frequency analysis

It was analyzed how many DNAs matched which characteristic of the examined variables, and two-way frequency tables were developed.

### 6.2.2. Content analysis

To enrich the frequency analysis, the explanations provided by the interviewees were analyzed and used to adjust the database as well as to better understand the reasons behind the answers provided. As described for the case studies, qualitative content analysis was applied.

### 6.2.3. Analysis of non-respondents

Contingencies of the regional group and the experience of the DNA with the answers provided were examined to be able to estimate what the non-interviewed DNAs would have responded. For the contingencies analyzed, please refer to Annex 9.

## 7. Limitations of the study

### 7.1.1. Case studies

- Deviations from the results obtained are possible due to specific cultural, historical or political conditions. To test the hypothesis, a broader study would be needed.
- The three chosen case studies might not be representative for all project developers. In the long run, the value of the SMA will have to be judged upon broader application in practice.
- The voluntary participation increases the probability that the research entities studied are motivated to take part, i.e. there might be a bias towards rather proactive project developers. On the other hand, the project developers were approached by the DNA and the national focal point of climate change, which could function as an indirect obligation to participate.
- It cannot be assessed whether all answers of the participants were honest as sustainable development is a political topic in the context of the CDM.
- Method triangulation was only possible on single aspects as the availability of secondary data was very limited with regard to sustainable development.
- Interviewer effects can generally result from the interaction between the participant and the researcher. They are dependent from the personal characteristics (e.g. appearance, voice, language, gender and position) as well as other expectations and opinions on both sides (participant and researcher).

### 7.1.2. Survey

- As the contribution to sustainable development of the CDM project activities is a political topic and may be perceived as a sensitive topic by the interviewees, the DNAs might have been tempted to over-report their engagement. This could be verified by examining the evaluation practices applied to CDM project proposals in the host countries, but this would go beyond the scope of this study.

- Interviewer effects can generally result from the interaction between the interviewee and the interviewer. As there was no face-to-face contact, the personal characteristics which might influence the results were reduced to voice, language, gender and position (researcher versus politician).
- Furthermore, the stream of conversation could have affected the responses. It cannot be entirely precluded that language difficulties (dominance of a foreign language, pronunciation, etc.) or other difficulties of understanding might have influenced the outcomes. In some cases, the interview was interrupted due to bad phone connections or other appointments of the interviewee. Nevertheless, all interviews were finally completed.
- The answers to the open questions were often unique or raised by very few interviewees. This was why they could not be analyzed quantitatively. The data was included in the analysis as a qualitative part to enrich the statistics developed.
- Furthermore, the interviewees provided *fuzzy data*:
  - By additional explanations to closed questions,
  - By vague answers,
  - By answers matching several categories. These answers were included in each category and the answers per category were calculated.

## Chapter IV – Peruvian context

### 1. Conditions for CDM project activities in Peru

#### 1.1. Country background

With a size of 1,285 km<sup>2</sup> (Cuánto SA, 2005)<sup>68</sup>, Peru is the third-largest country of South America. It shares borders with Chile, Bolivia, Brazil, Colombia and Ecuador. Peru's coast is 2,414 km long. Its capital is the city of Lima (Figure 15).



Figure 15: Map of Peru (CIA, 2007)

Peru is divided into three main regions: the desert on the Pacific coast covering nearly 12% of the area, the mountains of the Andes representing about 28% of the area and the rainforest of the Amazon basin in the East of the country covering about 60% of the area (Cuánto SA, 2005; INEI<sup>69</sup>, 2005a), consisting in 12.6% of the entire Amazon basin (INEI, 2005a).

#### 1.1.1. Natural resources and main economic sectors

However, this rough classification does not reflect the vast marine, mountainous and forestry biodiversity of the country. Peru disposes of 28 microclimates and 84 of the world's 104 *living zones*, i.e. ecosystems (Holdridge, 1947; ONERN<sup>70</sup>, 1985; INRENA, 1997)<sup>71</sup>.

The main assets of Peru are its natural resources. Peru is one of the richest countries in the world in mineral deposits, above all, copper, zinc and gold. Mining is the sector mostly contributing to the total Peruvian exports (61.7% in 2006, i.e. 14,464 million US\$ (MINCETUR, 2006)), but it is also one of the most disputed

<sup>68</sup> The extreme points are at a distance of 2,134 km North-South and 1,640 km East-West.

<sup>69</sup> Instituto Nacional de Estadística e Informática = National Institute for Statistics and Informatics.

<sup>70</sup> Oficina Nacional de Evaluación de Recursos Naturales = National Office for Evaluation of Natural Resources.

<sup>71</sup> See also the website of the Ministry of Agriculture of Peru, [http://www.minag.gob.pe/rn/rnn\\_eco.shtml](http://www.minag.gob.pe/rn/rnn_eco.shtml) (2007-04-26).

sectors due to its negative impacts on the environment, its bad working conditions and related social degradation (MMSD, 2002).<sup>72</sup> The transformation of the landscape caused by investments of the mining sector increased considerably from a few percent in the early 1990s to 10% of the Peruvian territory in 2000 (MINEM, 2000). Although a certain percentage of the profits have to be reinvested to contribute to the community, NGOs criticize that adequate technicians are often not available to implement these measures and that mainly local infrastructure is improved with these contributions. Furthermore, the NGOs criticize environmental impact analyses for being ambiguous and pressure from politics being non-existent.<sup>73</sup>

Regarding energy, the country disposes of a big hydroelectric potential. Important petroleum and natural gas reserves<sup>74</sup> can be found in the rainforests<sup>75</sup>. Due to the rich biodiversity, fish farming, agriculture and the food industry belong to the main productive activities in Peru. Furthermore, the Peruvian textile industry is known for its high-quality products. The combination of thousand-year-old cultures, colonial tradition and vast biodiversity make Peru very attractive to tourism. Recently, eco-tourism, which aims to benefit local communities and environmental protection, has become popular.

### **1.1.2. Over-exploitation**

However, over-exploitation and pollution threaten Peru's natural capital. Resource extraction jeopardizes the rainforests and its indigenous communities. Its adverse effects on the peoples' health are already strongly felt. Therefore, related aspects such as waste management, water sanitation, the creation of green areas and electrification are current development priorities in the country<sup>76</sup>. For instance, in 1988, 40% of the waste was disposed illegally in Lima Metropolitana. In 1996, the ratio increased to 78%. Until 2004, the situation improved, but still 25.6% of the waste was disposed illegally (Cuánto SA, 2005). In 2004, 63% of the population had sustained access to improved water sanitation and 83% to an improved water source (UNDP, 2006b). Green areas contribute to the air exchange in the cities, stabilize the soil and improve the life quality of the population. Still, 27.6% of the population had no access to electricity in 2004 (INEI, 2005a).

### **1.1.3. Climate change**

Climate change is not yet a priority in Peru. Although its impacts are already strongly felt, the connection to climate change is not yet broadly acknowledged by the population<sup>77</sup>. Still, it is a fact that many of the individual ecosystems are very vulnerable to climate change. For instance, dry forests are a special ecosystem severely affected by El Niño. As the communities living in the dry forests (for instance, in the North-West of Peru) are generally very poor, a cause-effect relationship between their poverty and climate change has been established. Therefore, sustainable forest management could generate strong sustainable development benefits for these people (e.g. income generation, economic livelihood, cul-

---

<sup>72</sup> This information was yielded within eight interviews with NGOs and one with Fondo Nacional del Ambiente (FONAM) during a visit to Peru (see Annex 5).

<sup>73</sup> As stated in the interviews with the NGOs.

<sup>74</sup> Total proven reserves of commercial energy are: 2,217,043 TJ of crude oil, 11,677,188 TJ of natural gas and 368,059 TJ of liquid gas. (MINEM, 2005)

<sup>75</sup> For instance, the contentious natural gas project Camisea in the Amazon rainforest close to the marine reserve Paracas already exploits this area.

<sup>76</sup> Based on the interview with FONAM.

<sup>77</sup> Stated in the interview with FONAM.

tural and spiritual identity, quality of life, health), especially if they are involved through community projects.<sup>78</sup>

#### 1.1.4. Population

In 2005, Peru's population amounted to 28 million people (Cuánto SA, 2005; World Bank, 2005)<sup>79</sup>, growing at a declining annual rate of currently 1.5% (Cuánto SA, 2005; INEI, 2005b; World Bank, 2005). Until 2050, it is projected that about 41.1 million people will live in Peru (Cuánto SA, 2005). The population is composed of several diverse ethnic groups: Most of the Peruvians are either indigenous (45%) or *mestizos*<sup>80</sup> (37%). White Europeans make up the next-largest segment of the population (15%). In addition, there are several minorities, such as African descendants, Japanese, Chinese and others (3%) (CIA, 2007). This diversity of ethnic groups is often a source of conflict, especially because wealth still is unequally distributed as a relic of Peru's colonial past. Due to technological innovation and the change in lifestyle, the traditional knowledge is in danger of being lost. Indigenous communities populate 18.56% of Peru's forest area (Cuánto SA, 2005), especially the Northern rainforest. These communities need the forest resources to support themselves. Deforestation caused by agricultural migration and slash-and-burn practices, and resource extraction threaten their survival and increase pauperization. Also, in the past, plantations, especially private investments, did not follow sustainable development criteria. Even today, protected zones are rarely clearly designated, as NGOs criticize<sup>81</sup>.

#### 1.1.5. Concentration in urban areas

The industrial centre of Peru is located in the coastal zone. The population concentrates in urban areas. In 2005, about one-third of the population lived in Lima Metropolitana, comprising the provinces Lima and Callao (INEI, 2005b). The population density there amounted to about 2,757 persons per km<sup>2</sup> in the city of Lima and to about 5,608 persons per km<sup>2</sup> in Callao (INEI, 2005a). Another third of the population resided in mid-sized towns, most of them near the coast, while the last third lived in the rural parts of Peru (Cuánto SA, 2005). This disequilibrium between population density along the coast and population sparseness in the rural hinterland creates social conflicts: People in the countryside are physically isolated, lacking in necessary infrastructure. In rural areas, about 30% of the people do not have access to electricity (INEI, 2005a), which is one of the lowest percentages in Latin America (World Bank, 2006). Communication facilities, employment opportunities and investments are also limited. The cities, on the other hand, suffer from overpopulation, which likewise creates un- and underemployment. Between December 2006 and February 2007, 61.8% of the people in Lima Metropolitana were not adequately employed (INEI, 2007). Transport is a major issue in Lima, which is why the community has launched a programme to switch to natural gas in public transport. Nevertheless, the many unofficial buses and private cars still pollute the environment considerably.

---

<sup>78</sup> ““(S)ustainable management’ means the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems,” (MCPFE, 1993, 1); see also interviews with NGOs.

<sup>79</sup> Estimates for 2007 amount to 28.7 (CIA, 2007).

<sup>80</sup> *Mestizo* is a Spanish term to designate people of mixed European (Spaniard) and Amerindian ancestry.

<sup>81</sup> Mentioned during the interviews with NGOs.

It is therefore one of Peru's priorities to promote decentralization and regional and rural development. Sustainable development of isolated regions is a precondition/sub-goal to reduce the regional disparities and to promote the well-being of the entire population. (UNDP, 2005)

### **1.1.6. Poverty**

The development of the country is hampered by the large proportion of poverty and the related social problems such as malnutrition, deficient education and health services, lack of potable water, and insufficient access to infrastructure, electricity and other services. 11.4% of the Peruvian population was counted as unemployed in 2005 (ILO, 2005). An even bigger problem is underemployment, estimated to exceed 50% in Lima Metropolitana (INEI, 2007). In 2003, 49% of the Peruvians lived below the national poverty line; in 2004, 12.5% of the population had to live on 1US\$ per day and 31.8% on 2US\$ per day (UNDP, 2006b). In 2002, the richest 10% of the population earned about 43.2% of the country's income, while the poorest 10% earned 1.1% of the country's income (UNDP, 2006b). Still, 19% of Peruvians lived in extreme poverty in 2004. 17% of the Peruvians did not dispose of sustainable access to improved water sources. The richest 20% of the households had access to piped water, but two-thirds of the poorest 20% of households either purchased their water from vendors or collected it from unprotected sources. (UNDP, 2006b)

### **1.1.7. Education**

School education is generally considered as a precondition/sub-goal for development. The rate of illiteracy has slightly been decreasing in Peru since 2001 (INEI, 2003) and reached 11.5% in 2005<sup>82</sup>, but among women the share was 16.3% (INEI, 2005b). In 2005, 13.1% of the women had not completed primary education, while among men the respective ratio was only 3.6%. Around 30% of both men and women completed primary education, but 45.8% of the men received secondary education, while only 36.5% of the women did. Slightly more women completed higher non-university education (10.1%, but only 9.5% of the men), while more men held a university degree (11.1%, but only 8.7% of the women) (INEI, 2005b). Apart from the general education needs, education in environmental matters at school and university level is needed.<sup>83</sup>

### **1.1.8. General economic conditions**

The Peruvian economy used to be very volatile in the past. Between 1985 and 1990, the GDP per capita fell by almost 22% (CONAM<sup>84</sup>, 2001), and the first hyperinflation in 1990 reached a rate of 7650% (Armas et al., 2001). Since the mid-1990s, the economy has been strengthened by political reforms. Between 2000 and 2005, the GDP increased from 53.3 billion US\$ to 79.4 billion US\$, of which 16% were exports in 2000 and 24.8% in 2005 (World Bank, 2005). Today, the macroeconomic situation has stabilized considerably. In 2006, the inflation was 1.14% – the lowest in Latin America that year (INEI, 2006). Foreign direct investment increased from 4.4 million US\$ in 1994 to 15.4 million US\$ in 2006 (ProInversión, 2006). In April 2006, Peru signed a Free Trade Agreement with the United States, which was approved by the Peruvian Congress in June 2006. In the

---

<sup>82</sup> In 2004, 11.6%, but the Human Development Report 2006 calculated 12.3% in 2004 (UNDP, 2006b).

<sup>83</sup> Mentioned during interviews with NGOs.

<sup>84</sup> Consejo Nacional del Ambiente = National Environment Council.

2006 Human Development Index, Peru ranked 82 out of 177 countries; thus, it is classified as a medium-income country (UNDP, 2006a).

### 1.1.9. Political background

Since the early 1800s, Peru is a presidential republic. Every five years, a single chamber with 120 seats is elected based on the constitution of 1993. Corruption is still a big problem in Peru. The Transparency International Corruption Perception Index of Peru is 3.5, with 10 being the lowest (TICPI, 2005). Wealth and power are unequally distributed: The elite of the Spanish descendants still has the largest influence while the indigenous Peruvians are highly disadvantaged. Due to this inequity, Peru was subject to a guerrilla war between Maoist rebels and the government during the 1980s and 1990s. Although the guerrilla groups have been destroyed, violence is still part of the daily life in form of murders, armed robberies, kidnapping and gang warfare. In 2000, Peru experienced another political crisis set off by the disclosure of the scandal of Montesinos, which led to President Alberto Fujimori being accused of corruption and violation of human rights. In 2001, the dismissal of Fujimori and thus the end of his authoritarian government encouraged civil movements and made the citizens hope for change. President Alejandro Toledo (2001-2006), however, failed to fulfil these hopes, as he was unable to overcome the difficulties of the debilitated financial system and the indebted private sector. Foreign debt and poverty still act as a brake on the country's development (Cigarán and Iturregui, 2004; Solís García, 2006). Since June 2006, President Alán García, who had already been president from 1985 to 1990, governs Peru.

### 1.2. Relevant legislation

The CONAM<sup>85</sup>, created in 1996, is the highest environmental authority in Peru (Cigarán and Iturregui, 2004). Its climate change department forms the Peruvian DNA.

A legal framework for sustainable development has been established, but concrete regulations are lacking<sup>86</sup>. The environmental legislation is already quite advanced, but compliance is insufficient due to rare and infrequent controls in a fragmented, ineffective system without joint coordination. EIAs<sup>87</sup> are obligatory for new projects and for existing projects increasing their capacity by more than 50%. Concrete regulations differ from sector to sector. The promotion of investments in some industries, such as in the mining sector<sup>88</sup>, is counterproductive to sustainable development as the extraction of the natural resources is accompanied by severe negative impacts: These are environmental impacts on air, soil, water and biodiversity as well as social impacts on the local population due to resettlement and social impacts on the workers with regard to health exposure and work conditions.

---

<sup>85</sup> National Environment Council.

<sup>86</sup> Also mentioned by 5 of the interviewed NGOs.

<sup>87</sup> "As its name implies, it pays particular attention to the environmental consequences of a policy or action. Typically, alternatives to the policy are also shown. Monetisation may also be included. Indeed, some EIAs encompass a CBA within their wider terms of reference. The objective which determines the listing of gains and losses is often unclear, risking double-counting. Moreover, no aggregation rule need be applied so that decisions are made on the basis of inspecting the matrix of impacts. Like MCA, however, EIA allows for objectives other than economic efficiency to be explicitly recognised." (Pearce and Markandya, 1989, 22)

<sup>88</sup> E.g. gold and copper mines in Cajamarca.

### **1.2.1. Agenda 21**

Under Agenda 21, national environmental agendas are formulated and regularly revised every two years. These national agendas further lead to the formulation of regional plans. They are developed by local experts in committees. At the time of the case studies (March 2006), 13 towns had established technical groups on air purification and these groups had developed baselines and monitoring methods as well as measures for implementation. Three of the 13 plans had already been approved by CONAM. (CONAM, 2006)

### **1.2.2. Constitution**

Article 2.22 of the Constitution of 1993 establishes that every person has the right to enjoy a healthy, balanced environment. Natural resources of the country are national heritage and the state has complete command of its exploitation. The state is obliged to conserve biodiversity (see Act 26839) and other protected natural areas with the aim to create a legal framework to promote sustainable development of the Amazon region (see Act 27037). (CONAM, 2001; Cigarán and Iturregui, 2004)

### **1.2.3. General Environmental Law**

The General Environmental Law of 2005 (Ley General del Ambiente, Ley 28611) indicates environmental development priorities. Access to information and stakeholder participation are basic concepts. The law contains seven fundamental principles:

1. the sustainability principle,
2. the precaution principle,
3. the prevention principle,
4. the principle of cost internalization,
5. the principle of environmental responsibility,
6. the equity principle, and
7. the principle of environmental governance.

Overall, it highlights some developmental priorities: The relationship of the population and the environment is described, emphasizing the relationship between culture and environment, the role of indigenous villages, farmer and native communities, and the importance of collective knowledge. The law contains a section on companies and environment regarding integral management and prevention at the source, environmental management systems and continuous improvement, clean production, the company's social responsibility, promotion of voluntary norms, technical norms, quality norms and eco-labelling, sustainable tourism, responsible consumption, and dangerous substances. Furthermore, it describes the natural resources, water, air, soil, rainforest and its fauna, as well as the use of non-renewable resources. The part on biodiversity deals with the conservation of the ecosystems, weak ecosystems, mountain ecosystems, marine and coast ecosystems, conservation of species, conservation of genetic resources, protection of traditional knowledge, biotechnology, conservation in situ and ex situ, protected natural areas, and the conservation of the landscape as a natural resource. Environmental quality is also strongly linked to health aspects. Topics are water quality for human consumption, noises and vibrations, radiations, emissions, air quality, management of solid residues, water quality in general, waste water management, and management of liquid residues. The section on science, technology and environmental education points out the promotion of research. The responsibility

for damages to the environment is a basic principle. The related control mechanisms and compensation of damages are described.

#### **1.2.4. National Environmental Policy**

Peru's National Environmental Policy of 2006 (PNA<sup>89</sup>) integrates the strategic development process of the country aiming at environmental viability of the productive activities and improving people's quality of life. It emphasizes the existence of healthy, viable and working ecosystems in the long run, the prevention, protection and recuperation of the environment and its components, as well as the important role of civic participation and of private and public organizations. The PNA follows five strategic lines:

PNA I: Promotion of national, regional and local environmental management

- Integrate policies
- Promote the transversal character of environmental management
- Aim to overcome poverty and to achieve sustainable development

PNA II: Management of natural resources

- Promote the conservation and sustainable use of natural resources
- Realize an integrated vision of ecosystems in a framework for a territorial regime

PNA III: Management of quality and environmental health

- Protect the environmental quality and urban habitability
- Prevent contamination
- Promote good practices and corporate social responsibility
- Aim to ensure health and the right to live in a healthy environment

PNA IV: Management and promotion of environmental conscience and culture

- Promote education, environmental conscience and culture, as well as civic participation in environmental decisions
- Promote access to environmental information and environmental justice

PNA V: Management of trade and environment

- Incorporate sustainable development of the country as a premise of trade policy
- Recognize the sovereign right to conserve, administer, valorize and use natural resources and cultural heritage sustainably
- Ensure adequate access to genetic resources and traditional knowledge
- Ensure equitable distribution of benefits
- Recognize the right to define the levels of environmental protection and the most appropriate measures to ensure the effective application of the environmental legislation

The PNA further provides a useful overview of the most relevant treaties regarding the environment, natural resources and conservation of biodiversity as well as of the cultural and natural heritage.

#### **1.2.5. Framework of Environmental Management**

The Framework of Environmental Management of 2004 (Ley marco del sistema nacional de gestión ambiental, Ley 28245) is relevant for public entities. It intends to ensure the most efficient compliance of the environmental objectives, and to strengthen trans-sectoral mechanisms for environmental management. Participatory mechanisms to involve the citizens in this process are to be promoted.

---

<sup>89</sup> Política Nacional Ambiental = National Environmental Policy.

### **1.2.6. National Agreement**

The National Agreement of 2002 (Acuerdo Nacional) comprises 29 policies. The nineteenth policy describes how sustainable development and environmental management is to be promoted in Peru. To overcome poverty and to create sustainable development, the aim is to integrate the national environmental policy with the economic, social, cultural and territorial ordinance policies. To improve quality of life, the policy points out the necessity to institutionalize public and private environmental management, to guarantee the protection of the environment and promote sustainable settlements.

### **1.2.7. National Environmental Agenda**

The National Environmental Agenda 2005-2007 (Agenda Ambiental Nacional 2005-2007) specifies four so-called action fronts (frentes de acción). These are activities which should not exclusively be implemented by the public sector but also by the private sector and civil society:

- The green front: knowledge, conservation and use of natural resources and of biodiversity.
- The brown front: quality and environmental health (e.g. referring to clean production processes, waste management, air, water and soil quality).
- The blue front: education, conscience and environmental culture.
- The gold front: commerce, sustainable tourism and environment (including bio-commerce).

### **1.2.8. National Decentralization Plan**

The National Decentralization Plan 2004-2006 (based on the Ley De Bases De La Descentralización, Ley 27783, of 2002) points out the urgent need for a local, rural, decentralized development as well as political decentralization to alleviate regional disparities and to foster the well-being of the entire population.

### **1.2.9. National Strategy on Climate Change**

The National Climate Change Strategy of Peru (estrategia nacional del cambio climático) formulates strategic lines (líneas estratégicas) to combat climate change<sup>90</sup>:

1. Promote and develop scientific, technological, social and economic investigation into vulnerability, adaptation and mitigation with regard to climate change.
2. Promote policies, measures and projects to develop adaptation capacity to climate change effects and reduction of vulnerability.
3. Active participation of Peru in the international climate change negotiations, to defend the interests of the country and to protect the global atmosphere.
4. Development of policies and measures oriented towards the rational management of GHG emissions and other air pollutants as well as the reduction of the climate change impact, considering the available mechanisms in the Kyoto Protocol and other economic instruments.
5. Dissemination of national knowledge and information on climate change in Peru and its aspects of vulnerability, adaptation and mitigation.
6. Promotion of project aiming at poverty alleviation, vulnerability reduction and/or GHG mitigation.

---

<sup>90</sup> Translated from Spanish.

7. Promotion of the use of adequate and appropriate technologies for adaptation to climate change as well as mitigation of GHGs and atmospheric pollution.
8. Involvement of the society to improve adaptation capacity to the impacts of climate change, to reduce vulnerability and mitigate the GHG emissions and environmental pollutants.
9. Management of forestry ecosystems to mitigate the vulnerability to climate change and improve carbon capture capacity.
10. Explore the possibility to achieve a just compensation of the adverse effects of climate change generated mainly by industrial countries.
11. Management of fragile ecosystems, especially mountainous ecosystems, to mitigate the vulnerability to climate change.

### **1.2.10. National Strategy of the CDM**

The National Strategy of the CDM (estrategia nacional de MDL) created within the National Strategy Study (NSS) identifies the following steps to promote the CDM in Peru:

- Step 1: Facilitate institutional coordination
- Step 2: Promote investment in CDM projects
- Step 3: Build local capacities
- Step 4: Promote the development of a legal framework
- Step 5: Promote project funding
- Step 6: Promote technology transfer

These are meant to be implemented through three strategies of which each is linked to concrete objectives and instrumental targets:

1. Disseminate information on CDM.
2. Build local capacities to reduce transaction costs and improve access to pre-investment resources for CDM projects.
3. Promote rules that facilitate capital and technology transfer.

### **1.2.11. Conclusion**

This legal framework indicates the host country's development priorities. In the current legislation, however, concrete regulations are still lacking in many areas (CONAM, 2006). It does not provide information like operational targets which can directly be used by CDM project developers. Being aware of the need to actively include businesses, CONAM launched a process of voluntary commitments with a group of progressive companies to receive the ISO14000 certification and to incorporate environmental management systems in the companies. CONAM itself, as the first public institution, is ISO 9000 and 14000 certified. (CONAM, 2001; Cigarán and Iturregui, 2004)

Institutional factors are responsible for observing any violations of laws and regulations. The political system is segmented, and budgets would have to be specified to put the ideas into practice<sup>91</sup>. The governmental publications provide, if carefully studied, valuable guidance for the project developers. The national priorities can be identified. However, concrete targets are missing. This transposition has to be undertaken by the project developers themselves. As the topic of sustainable development is still quite new for most CDM companies, they are looking for guidance that is more explicit.

To support CDM project developers, especially in their policy analysis when developing their sustainability strategy, it would be helpful if the DNA could create

---

<sup>91</sup> Mentioned during the interviews with the NGOs.

a list, which does not have to claim comprehensiveness, of the national priorities and ideas for action relevant for CDM project activities. A website, for instance, would be a useful means of making this list easily accessible. Detailed case studies of other CDM project activities and their sustainability strategies could supplement this source of information.<sup>92</sup>

### 1.3. CDM potential in Peru

The CDM is expected to have an impact on climate change and to generate other development benefits for the country. It can contribute to sustainable resource management and create development impulses beneficial to the population. Furthermore, the CDM is deemed to function as a catalyst: It has the potential to change the attitudes and behaviour of private and public institutions as well as to promote education and reflection on climate change. The CDM should not be just a compensation for the damages that are done. The CDM could instead strengthen, but not enforce, the existing legislation on, e.g., air quality with respect to the permissible emission limits of the industry.

The CDM is generally associated with environmental impacts such as cleaner technology and reduced contamination. Positive impacts on bio-energy, methane capture, and especially impulses for small-scale project activities are expected. Transport project activities could alleviate the situation in the big Peruvian cities. Attempts are made to reduce the migration to bigger cities by promoting rural development.

The CDM has potential to create employment, alternative sources of income and other associated benefits, like improved infrastructure (e.g. roads, connections to electricity grids, clean water). It is hoped that the poor will benefit from this development impulse. The innovative aspect of the CDM is that it offers a new way of project financing by turning CDM project activities into profitable investments due to the additional income from the CERs. However, the distribution of the benefits has to be monitored. It is suspected that organizations (e.g. corporations or well-organized interest groups like farmer committees) might benefit from the CDM while small stakeholders like the affected population will not<sup>93</sup>.

Hydropower is the most prominent technology of the CDM in Peru, followed by biomass and bio-fuel. Nevertheless, some NGOs think that land use, land use change and forestry (LULUCF) project activities have not been sufficiently prioritized, and they even characterize Peru as one of the most backward countries in reforestation.<sup>94</sup>

---

<sup>92</sup> These guidelines could function as recommendations which would still allow the DNA to stay flexible and open for project offers.

<sup>93</sup> This concern was raised during the interviews with the NGOs.

<sup>94</sup> Mentioned during the interviews with the NGOs.

The current CDM project portfolio in Peru includes the following CDM project activities<sup>95</sup>:

Project Type: Energy	Quantity	Investment (US\$ millions)	tCO <sub>2</sub> eq. reduced per year
Hydroelectric	34	1,793.6	5,758,178
Transmission line	3	32.9	34,649
Wind	2	71.4	77,247
Solid waste	4	8.8	661,238
Transportation	3	825.1	1,361,872
Biomass	11	153.4	>1,265,985
Fuel switching	3	6.6	490,339
<b>Total</b>	<b>60</b>	<b>2,891.8</b>	<b>&gt;9,649,508</b>
Project type : For- estry	Quantity	Investment (US\$ millions)	tCO <sub>2</sub> eq. reduced per year
Afforestation and reforestation	11	52.58	9,973,821

**Table 2:** Peru's current CDM project portfolio

The CDM may have big potential, but it depends on the implementation whether it will be able to both achieve additional emission reductions and further contribute to sustainable development. On the one hand, the current CDM does not capture all kinds of contributions to sustainable development<sup>96</sup>. On the other hand, CDM project activities may also have negative side effects on CDM project activities. For instance, income generation to locals is not per se sustainable, as it depends on what the income is finally spent.<sup>97</sup>

## 2. The position of the Peruvian DNA

This section is mainly based on an interview conducted with the Peruvian DNA (CONAM, 2006); other sources referred to are identified. The valuations given by the interviewees are personal and are no official statements of the DNA.

### 2.1.1. Approval criteria

#### 2.1.1.1. DNA Recommendations

To ensure that the CDM project activities are in line with the national agenda, project activities have to be approved by the DNAs. CONAM has implemented a fast approval procedure (max. 45 days). At the time of the case studies, no set of criteria<sup>98</sup> had been developed by CONAM because CONAM chose to give recommendations to the project developers. These recommendations were approved by the National Climate Change Commission and are available in the proceedings on the fast evaluation of projects for the Clean Development Mechanism (Procedimiento - Evaluación rápida de proyectos para el Mecanismo de Desarrollo Limpio 'MDL', CONAM-P-34<sup>99</sup>):

<sup>95</sup> <http://www.fonamperu.org/general/mdl/portfolio.php#fosepro>, the website of the national focal point of climate change, Fondo Nacional del Ambiente (Peru), retrieved on 2008-02-24.

<sup>96</sup> For instance, please refer to the discussion at COP11 and 12 about the displacement of non-renewable biomass: Some small-scale project activities (such as stove improvements) with generally acknowledged impacts on sustainable development turned out to be ineligible under the CDM.

<sup>97</sup> Money is fungible: additional income of companies could be used for unsustainable business activities, income of individuals could be spent on e.g. alcohol, gambling or prostitution.

<sup>98</sup> Neither the NGOs nor the project developers interviewed were informed about the requirements for CDM project activities. This shows the need for broader information and clearer statements.

<sup>99</sup> Unpublished, available from CONAM upon request.

- The project activity should be in line with the present legislation (including those on EIA).
- The project activity should dispose of the approbations of the relevant ministries.
- The project activity should use a proved technology.

Furthermore, CONAM suggests to its project developers that the project activity dispose of an environmental plan (and a social investment plan) which has to be known to and accepted by the stakeholders. The agreement on the social investments is usually a voluntary contract between the project developer and the stakeholders (e.g. the community). The investment plan has to be developed by the company and the stakeholders in dialogue. The DNA further recommends<sup>100</sup> the project developers to spend a certain percentage of the CERs delivered by the project activity on social investments.<sup>101</sup>

#### 2.1.1.2. Environmental Impact Analysis

The specific regulation for environmental impact assessments (EIAs)<sup>102</sup> differs from sector to sector. In general, there are three options: no EIA has to be carried out, a declaration of environmental impacts is required (usually when there are no or negligible negative impacts), or an entire study is required. At the time of the case studies, most sectors had already developed this regulation (the one of agro-industrial sector in process). All CDM project activities have to carry out an EIA, either as an entire study or a short version in form of a declaration of environmental impacts (e.g. for small-scale project activities).<sup>103</sup>

An evaluation of the social component is not explicitly required, although project developers should address this topic as the project activity should contribute to sustainable development and this implicitly includes the social dimension<sup>104</sup>. Usually, an EIA consists of a physical-environmental analysis and a social analysis. Impacts are illustrated in matrices and flow diagrams. Plans of contingency are established for the three main phases of the project life cycle: construction, operation and shutdown. The costs of implementation have to be estimated.

For existing projects, e.g. methane capture at an existing landfill, legal norms regarding an EIA do not exist. In the past, the Committee of CONAM required in

---

<sup>100</sup> Recommendations by a DNA can create a factual standard; however, there is a decisive difference between a recommendation and a requirement: A recommendation can be adapted quickly if experience teaches so. It does not claim universal validity – an issue not to be underestimated when dealing with sustainable development. It thereby offers more flexibility to the DNA and the project developers. Requirements could lead to a narrow view preventing the discussion of concepts and threatening innovation. Nevertheless, the absence of requirements can lead to complete arbitrariness, which is even less desirable. It is therefore very important that the DNA promotes the competition for sustainable proposals if it chooses to provide only recommendations instead of binding requirements. Otherwise, the quality of the project activities is in danger.

<sup>101</sup> There is no official document available. CONAM recommends investing 30-40 % of the CERs, but in reality the projects spent around 2-5% at best. Source: Interview with CONAM.

<sup>102</sup> “The National System for Environmental Impact Assessment Act (Act 27446) creates the public national system of identification, prevention, supervision control and mitigation of negative impacts caused by human action in the context of specific investment projects.” (Cigarán and Iturregui, 2004, 31)

<sup>103</sup> In FONAM’s experience, environmental impacts have been analyzed for all CDM project activities so far, even those which did not require an EIA under Peruvian law because, as a matter of fact, at least a declaration of environmental impacts is expected by CONAM.

<sup>104</sup> In FONAM’s experience, the three dimensions of sustainability are not addressed with equal weight in reality where the economic component dominates and emission reductions are the main goal on the environmental side. Yet, FONAM takes countermeasures and virtually obliges the project activities it promotes to address the three dimensions equally.

these cases a PAMA (programa de adecuación y manejo ambiental), which is a programme of adequation and environmental management for existing projects. Unlike the EIA, a PAMA is elaborated when a project has already been implemented.<sup>105</sup>

### 2.1.1.3. Stakeholder Consultation

The CDM process is participatory by nature, which is a basic element to take adequate decisions leading to sustainable development. The Peruvian DNA generally supports a participative approach to define sustainable development at international, national and project level. CONAM stressed that not only experts but also grass-roots leaders should be involved, if possible.

All CDM project activities have to conduct a stakeholder consultation before approval by the DNA, as required in the PDD. Apart from this, stakeholder participation is required for the EIA. The affected population and relevant authorities are invited to the stakeholder consultation, where the project developer presents the planned project activity.

During the consultative meetings, sustainable development aspects are discussed<sup>106</sup>. This requires special skills as stakeholders often have different educational backgrounds and are not well informed on the topic. CONAM functions as an observer and conducts interviews with the main actors to verify whether they have been accurately involved. The DNA also conducts surveys among the population to monitor whether the stakeholder consultation has been carried out satisfactorily. Based on this procedure, CONAM ensures that all relevant stakeholders are involved and their comments are adequately taken into account in defining sustainable development and in the decision-making of the project activity. Furthermore, CONAM assumes that the stakeholder associations taking part in the process adequately represent the interests of the citizens, as they defend the *common good* following the DNA.

The common good is a concept which is as ill defined as the one of sustainable development. It cannot be precluded that associations might pursue the maximization of the benefits to their interest group, i.e. a partial view. Benefits to certain stakeholder groups are not automatically sustainable: For instance, a donation to a stakeholder association is a direct financial benefit to this organization, but the money could be spent on things other than sustainable ones.

Increasingly, stakeholder consultations are applied before project approval in Peru, even outside the CDM context. However, some NGOs criticize<sup>107</sup> the current practice of these stakeholder consultations for not really involving the stakeholders, but just informing them in presentations of the projects planned without establishing a dialogue. Sometimes the consultations are even not held by the company itself, but by an external consultant. In this constellation, many stakeholders cannot bring their ideas forward effectively.

### 2.1.2. Follow-up of CDM project activities

In Peru, project developers have to include a monitoring plan for sustainable development criteria and indicators in their PDD. The current practice in Peru is that

---

<sup>105</sup> FONAM pointed out in the interview that there is a risk that these assessments might become simple requirements without the documentation being critically analyzed.

<sup>106</sup> When FONAM supervises project activities, the process starts with an initial phase of surveys and activities to spread information, e.g. during workshops. The stakeholders are informed about the planned project activity, and questions and claims are collected, which are sometimes difficult to integrate into the design of the project activity.

<sup>107</sup> Concerns were mentioned during the interviews with the NGOs.

the PDD includes a Sustainable Development Monitoring Plan (SDMP). However, the indicators chosen do not correspond to the guidelines for SMART indicators. The targets are too general. The indicators merely have to be positive to be fulfilled. The reason for this might be that CDM project activities merely have to *contribute* to sustainable development, but there is no indication to what extent. Nevertheless, it is obvious that a criterion like job creation advertised by the PDD can be fulfilled by employing just one person, e.g. another security person. This would lead the SDMP ad absurdum.

CONAM visits the area on an annual basis to verify whether the plans are carried out. In case negative impacts of some project activities are noticed ex post, corresponding legal consequences ensue. If potential negative impacts are not covered by the current legislation, CONAM intends to make the project developers morally accountable and oblige them to compensate for the effects.

To create incentives for high-quality results, CONAM offers an award each year for exemplary project activities.

### **2.1.3. CONAM's definition of sustainable development**

CONAM follows the three-pillar approach (economic, environmental and social) and recognizes that no single operational definition of sustainable development exists, which is generally valid in all contexts. In fact, CONAM is aware that there is a variety of definitions which are determined by the concrete conditions. Therefore, a project activity is not required by CONAM to contribute to all three pillars equally.

The MDGs are considered for CDM project activities, as they form the international frame for development activities, but they are not operational enough to be used at project level and to directly help to improve a project activity. At the time of the case studies, the CDM Gold Standard was not applied in Peru.

The Peruvian DNA considers the two main goals of the CDM – emission reductions and sustainable development – as equally important. According to the Peruvian DNA, the first priority of the CDM is to contribute to the local and national environmental plans. The second priority is to carry out voluntary activities to further improve the environment and the social conditions. CONAM is convinced that CDM project activities in Peru combine positive effects on emission reductions and on sustainable development. The expectation is to implement policies reducing local air pollutants with the help of the CDM programme.

### **2.1.4. Measuring the contribution to sustainable development**

The Peruvian DNA recognizes that criteria to assess the contribution to sustainable development of a CDM project activity make decisions more objective, and supports sustainable development criteria for a general alignment. CONAM is in favour of voluntary national sustainable development criteria, but rejects obligatory ones. The DNA further recognizes that operational criteria and indicators to measure the contribution to sustainable development of a CDM project activity are needed and indicators should be defined at project level. The DNA considers the criteria and indicators presented in the PDDs of Peruvian CDM project activities operational.<sup>108</sup>

---

<sup>108</sup> In FONAM's experience, it is current practice that sustainable development is discussed in the company with a major focus on environmental aspects and that a plan is developed including some projects for the community as recommended by CONAM. However, operational criteria and indicators are generally not formulated. Some companies use ISO standards, but these do not cover all relevant criteria.

CONAM is aware of the fact that companies might oppose very restrictive and obligatory national criteria for sustainable development. If the benefits of sustainable development criteria could be demonstrated and project developers could differentiate themselves from others through their sustainability strategy, the DNA would still think that companies might be willing to accept national criteria. In CONAM's experience, project developers taking part in the CDM are on average more visionary and might therefore possibly be more supportive of national sustainable development criteria.

### 3. Conclusion

Although the Peruvian government has adopted legislation addressing sustainable development, the legal and regulatory system in Peru is fragmented and not sufficiently operationalized. CONAM has a supervisory function, but is not independent from other governmental processes. Under the current practice, the underlying values are not made sufficiently explicit, and thereby the concept of sustainable development remains unclear. However, this is urgently needed because project activities reducing emission are not per se sustainable. CONAM has not developed sustainable development criteria, but procedural recommendations. One reason for this absence of concrete criteria may be the well-known phenomenon of the race-to-the-bottom (Thorne and Raubenheimer, 2001). Another explanation refers to a political motivation: Once criteria have been defined, the DNA has committed to a definition of sustainable development. If new findings and experience disprove this initial concept, the DNA may see itself obliged to legitimate their original statements. It may be more complicated to correct once officially approved criteria. The absence of criteria has the advantage that it leaves room for innovation. Under these conditions, project developers are required to define what sustainable development means at project level and have to find solutions which are adequate in the concrete case<sup>109</sup>.

---

<sup>109</sup> This is in line with the constructivist concept which states that sustainable development depends on the specific context and varies between groups and individuals. However, it is important that practices be based on perspectivism, and not on relativism: The constructivist paradigm does not postulate that anything goes. Perspectivism, by contrast, describes the fact that different perceptions exist and that they have their legitimization.

## Chapter V – Presentation of cases

This chapter presents the data collected within the three case studies in Peru. The results of the initial interviews and the sustainability strategies developed by the project developers are presented in detail, including the charts developed and the notes of the participants. Thereby, the reader can get an idea of the attitudes and perceptions of the three project developers and can track the development of the concepts along the SMA. The chapter provides the overview needed to follow the cross-case analysis in the chapter six.

The illustrations all follow the same coding: the white boxes represent goals, the light grey boxes activities and the medium grey boxes indicators and the dark grey boxes external influences. The black boxes are not under the influence of the project developer. The arrows show the links between the boxes: the direction of the arrow expresses the direction of influence. The dashed line separates the high level goals from the concrete goals directly linked to the project activity.

The following three case studies dealt all with hydroelectricity but with diverse technologies: Case A was a run-off-river project, Case B dealt with hydroelectricity generation in caves and Case C constructing a transmission line for electricity. Case A was already registered as a CDM project activity, while the other two were still in the planning phase. The size of the project developers differed considerably: Case A was a one-man company, the company of Case B employed 79 persons and the company of Case C disposed of 252 employees plus 20 fixed-term workers. Also regarding the sizes of the project activities the cases differed: Case A was a small-case project activity while Case B and C were regular project activities. Company A was a private business, while Case B and C were public companies in process of privatization.

### 1. CASE A

#### 1.1. Preparatory analysis

The first data source to consult about information on this project activity was its PDD. The project activity was a bundle of three small run-of-river hydropower plants close to Peru's capital. The installed capacity amounted to 4.1 MW and the expected electricity generation came to 30.1 GWh/Yr. The electricity generated was supplied to the National Interconnected Electric Grid (SEIN<sup>110</sup>).

Apart from the mandatory documentation on emission reductions, the PDD contained a social investment plan and an SDMP with indicators specified. However, the PDD was not explicit enough to make an outsider understand the project's concept of sustainable development. The planned activities remained vague. Figure 16 shows the information provided by the PDD.

The logic link between emission reductions and the corresponding activities was well described in the PDD (Figure 16 on the left), but all other activities were not explicitly linked to the main goal of sustainable development. The researcher took the role of a third party who wanted to understand how these activities might contribute to sustainable development, and tried to reconstruct the *missing links*. The results are illustrated in Figure 17 and show the confusion which can be the result of such an inexplicit description of the contribution to sustainable development in the PDD.

---

<sup>110</sup> Sistema de Electricidad Interconectado = Interconnected Electricity System.

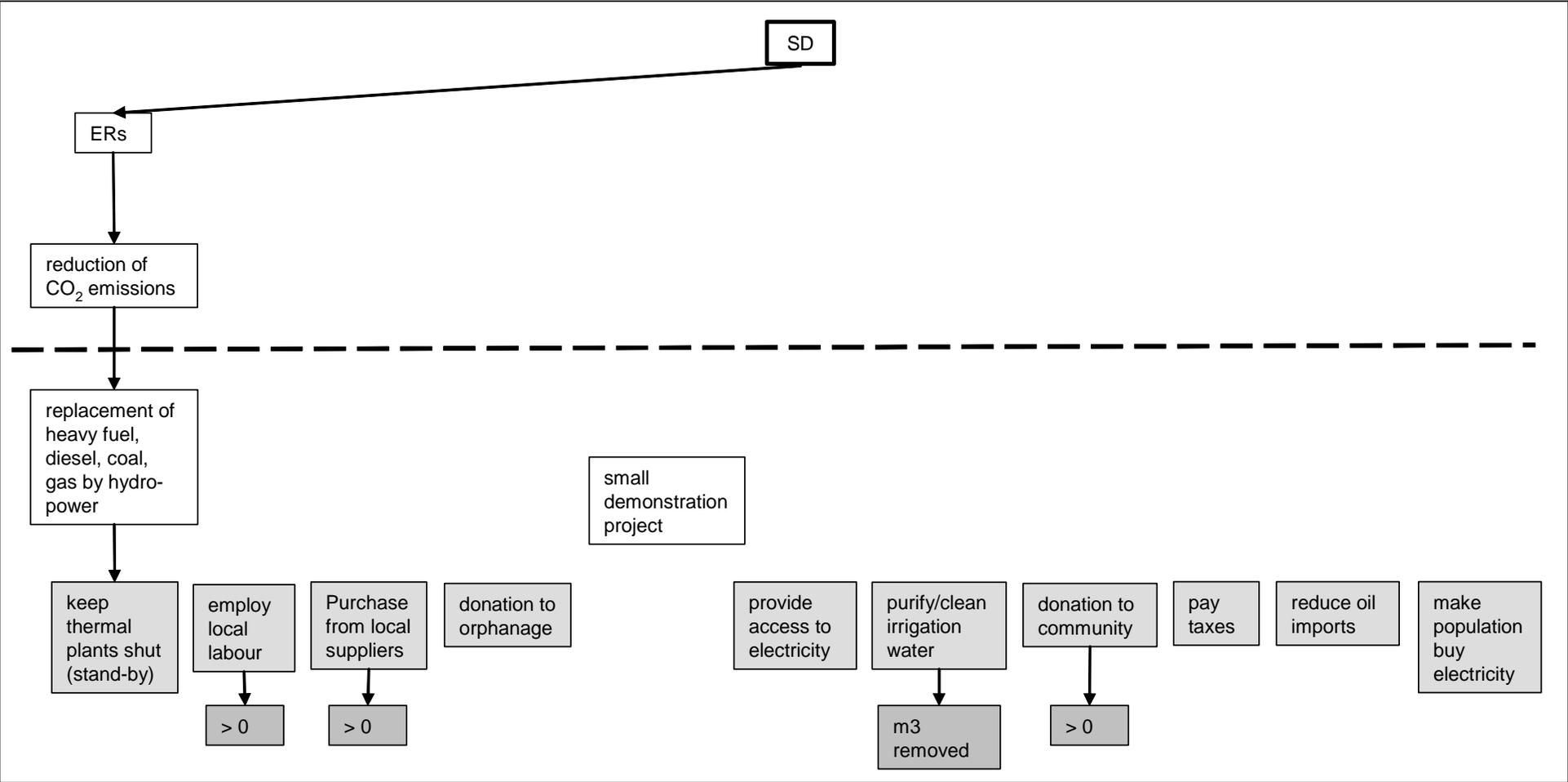


Figure 16: Case A: Information provided in the PDD



Most links remained questionable: the donation to the orphanage and the donation to the community were not explained. A donation to an orphanage might aim at reducing the bad living conditions of the children in the orphanage. The donation to the community might be dedicated to sustainable investments or just to stabilize the community's budget or, even worse, might be a payment to obtain the community's approval. Apart from that, many indicators were missing and none of the existing ones was SMART. This reconstruction of the strategy based on the information provided in the PDD reflected the understanding of sustainable development of an outsider and did not match the one of the project developer, which was clarified during the first interview with the project developer

## **1.2. Initial interview**

At the start of the interview, the project developer described his company: Company A was a one-man business which undertook the project planning and operation. Construction and fabrication was carried out by a Peruvian engineering and construction company. The information exchange between Company A and the engineering and construction company was quick and confidence-based, according to the project developer.

### **1.2.1. Perception of the CDM**

The project developer explained that the CDM facilitated the good contact with the community. In his project activity, no technological transfer took place, as the technology was already available in the country. In future, the project developer intended to engage more in renewable energies and the CDM using the experience he had gathered from his first project activity.

### **1.2.2. National legislation**

The project developer already had experience with EIAs. Although the Peruvian law did not require an EIA for this project type (of less than 10 MW capacity), the international bank involved in financing the project activity requested a declaration of the environmental impacts. This proved to be very useful, as the project developer later learned that the CONAM, the Peruvian DNA, also expected at least a declaration of environmental impacts of all potential CDM project activities. This shows that not all requirements are generally known by the project developers. Apart from that, the project developer did not identify any specific national environmental or sustainability regulation, legislation or programme relevant for the CDM project activity.

### **1.2.3. DNA criteria for sustainable development**

In general, the project developer was irresolute whether it was important to have criteria to assess the contribution to sustainable development of a CDM project activity, because he considered each case as individual, and there were no universal rules to measure sustainable development. Nevertheless, he conceded that criteria could be helpful to increase the benefits to the environment and the community; at the same time, he pointed out that it was difficult to deduce indicators to evaluate the project activities.

When answering to the more in-depth questions, the project developer supported international criteria to evaluate the contribution to sustainable development of CDM project activities, as long as they were not too restrictive. He was in favour of minimal criteria which could create a common standard and the same basic conditions everywhere. The project developer was indifferent regarding national

criteria but strongly supported project-specific criteria because they helped the project management to define the distinct goals of the project activity. He further was of the opinion that a DNA should define a set of sustainable development criteria to be more objective in its decisions but thought that CONAM so far had not defined any. These criteria should be derived based on the experiences with the CDM in dialogue with stakeholders and should create a minimal standard; any other activity should be voluntary.

#### **1.2.4. Definition of sustainable development**

The project developer was convinced that there was no universal definition of sustainable development; at most, a very general one referring to the quality of life and the protection of the environment.

The project developer considered emission reductions as the primary goal and sustainable development as the secondary goal. He added that sustainable development was difficult to grasp.

He was of the opinion that emission reductions and sustainable development could both be achieved by the CDM. Small hydroelectric plants still required additional effort to be implemented in Peru. He explained that in the case of company A, a contribution to sustainable development was to sell the electricity where it was produced and thereby to foster the development of the area. In addition to that, the solid residues in the river used by the hydroelectric plant would be collected by the project developer. These were the direct benefits related to the planned project activity mentioned by the project developer.

For the project developer, a pure donation was not sustainable. He added that the criterion should not be to spend money but to invest money in a sound way, for instance, in education or health. The concrete investment had to be discussed with the stakeholders. According to the project developer, they had the right to decide on what they needed, but the project developer had the right of veto, e.g. if the propositions were not sustainable or exceeded the budget. In the case of Company A, sustainable development criteria and indicators had been defined only for this specific CDM project activity.

#### **1.2.5. The company's goal system and planning**

The project developer had set a short time horizon for strategic planning at Company A. He explained that as soon as the plant was operating and generating income, his vision was fulfilled. The only explicit company goal was profitability. This CDM project activity would remain the only one of this company. CDM goals were not part of the company goals. The measurement of goal attainment was therefore straightforward and no trade-offs were identified.

Nevertheless, the project developer recognized some interdependencies between the CDM goals and the company goal. The goals could influence each other positively, because the CDM helped the project to progress, an investor could be found, and the CERs made the project activity more profitable. However, the goals could also come into conflict with each other, especially concerning the question of investment additionality: for an investor, the project activity had to be profitable to obtain a credit; but for the registration under the CDM, the project activity had to be financially dependent on the CERs.

The project developer explained the project activity was optimized under sustainability aspects through cost reduction. All material and services were provided by one supplier (the above-mentioned Peruvian engineering and construction company). This reduced costs by about 40%. The project developer added that he had not used a consultant and the international bank took the project risk, which fur-

ther kept the costs low for Company A. Thereby, the investments to generate sustainable development would be realized at the lowest possible cost.

The project developer explained that sustainability indicators for production and waste (solid residues) were monitored monthly. Other indicators had yet to be monitored, as the investments had not yet taken place because they depended on the income from the CERs. The investments would be realized following the order of priorities in the contract with the community.

### **1.2.6. Sustainability concepts and management systems**

The concept of the three pillars, the CDM Gold Standard and the Millennium Development Goals were not known to the project developer. Sustainability management systems (such as TBL, ISO 9000 series, ISO 14000 series, SA 8000, AA 1000 series, BSC or SBSC) were neither known nor used by the company.

### **1.2.7. Participation**

Obviously, there was no team for sustainability issues at Company A, as it was a one-man-company. The project developer considered it “hypercritical” to establish an interdisciplinary team for sustainability issues, because such a team was a cost driver. However, he conceded, that a team might make sense when many projects of that kind were realized. Nevertheless, he was of the opinion that in general one person should assume this task. The individual had to be from the top-management (e.g. the project owner), as a person without the necessary authority, like a consultant, was not able to take decisions.

The project developer explained that the identification of the stakeholders was straightforward in the case of Company A. Stakeholder needs were determined during the consultations on the project activity. The internal stakeholders of the project activity were the four shareholders and their main interest was the monetary benefit. As main external stakeholders, the project developer identified first the government who had an interest in projects contributing to sustainable development. Second, the population was identified as a stakeholder, represented by the mayor and the local development NGO. The information gathered on stakeholder needs had been explicitly integrated into the design of the project activity (especially the social investment plan).

According to the project developer, a participative approach to define sustainable development criteria should be applied, if possible, at international, national and project-specific level.

In Peru, the final stakeholder consultation was obligatory for a CDM project activity, but the initial talks with the main stakeholders were not. The sustainability strategy was developed in dialogue with the main stakeholders.

The project developer was overall satisfied with this procedure. During the stakeholder consultations, sustainability issues were the main subject of discussion. Finally, an agreement was reached.

According to the project developer, disillusion of the stakeholders could not occur if the project developer sat together with the stakeholders and negotiated a strategy. The amount to be spent had to be determined ex ante by the company. To ensure credibility, this process had to be transparent.

### **1.2.8. Learning organization**

The project developer explained that at Company A there were no feedback loops. Quality was controlled by experience and knowledge. The project developer described a learning organization as horizontal and disposing of flexible communi-

cation and cross-functional teams. He added that in practice this was not achieved in most companies.

### 1.2.9. Potential reactions

Any negative impacts on sustainability, if noticed ex post, would have to be compensated. However, the project developer declared that he would not undertake a project activity which could run the risk of strong detrimental impacts (risk exclusion).

## 1.3. Application of the SMA

### 1.3.1. First focused discussion

#### 1.3.1.1. Policy analysis

During the focused discussion, the project developer marked the following sustainable development criteria where the project activity could have an impact:

**Environmental criteria:** emission reductions, reduction of fossil fuel, conservation of local resources, reduced pressure on local environment, improve health and other environmental issues, water quality, waste management, use of renewable resources.

**Economic criteria:** income for local entities, employment, cost-effectiveness/micro-economic efficiency, growth, investments, sector development, technological self-reliance, project replicability, skills development, regional economy, infrastructure, energy provision.

**Social criteria:** universal primary education, improve quality of life, increase energy access, good governance, information sharing, employment (see economic criteria), participation, improve service availability, capacity development, empowerment (marginal groups, social networks), education and training, rural development.

**Business criteria:** involve stakeholders, increase resource productivity (through experience), organizational learning.

#### 1.3.1.2. Development of the goal hierarchy and the activities

Subsequently, the goal hierarchy was reconstructed (Figure 18). Emission reductions were considered as the main goal and sustainable development as the secondary goal. The logic chain of the emission reductions was well known: Emissions (here: CO<sub>2</sub> emissions) were reduced through the replacement of heavy fuel, diesel, coal and gas by a zero-fuel, which was hydropower. Under the second goal, sustainable development, four preconditions (or sub-goals) were identified: learning/capacity building, governance (of the company), quality of life and stability of the national revenue department.

#### Learning/capacity building

The project developer contributed to information sharing through the creation of the PDD and through presentations at seminars and conferences. However, an important part of information sharing in form of training, publication and promotion was guaranteed by other actors, namely CONAM, FONAM<sup>111</sup>, the UNFCCC, the international bank and the local bank.

---

<sup>111</sup> Fondo Nacional del Ambiente = National Environment Fund.

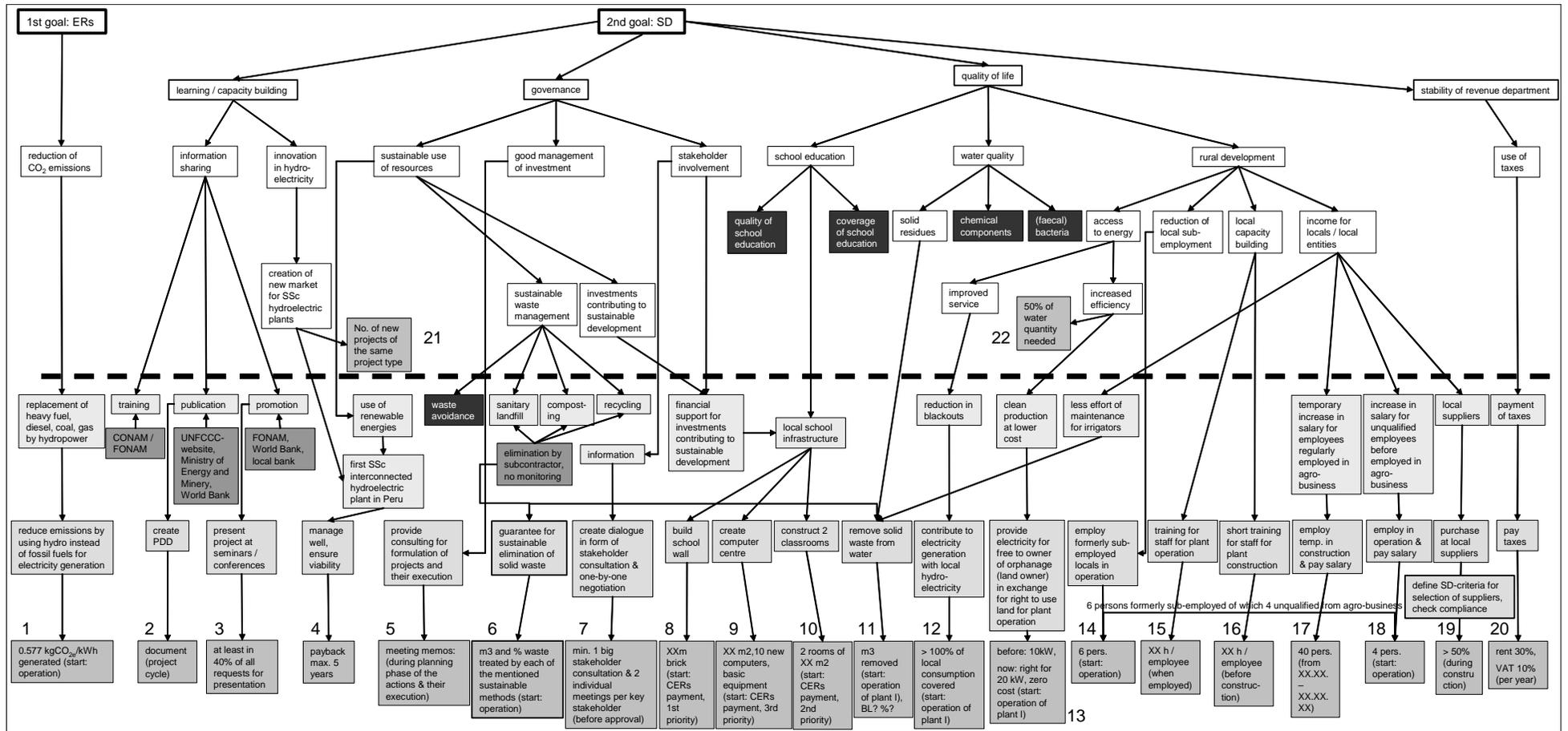


Figure 18: Case A: Pathway of sustainable development

According to the project developers, the project activity had another positive impact on learning and capacity building: As it consisted in the first interconnected small-scale hydroelectric plant in Peru, it demonstrated that there was a new market for this project type. This could lead to more investments of this type and enhance innovation in this branch. The project activity could be exemplary if it was managed soundly ensuring its profitability. Such short paybacks could attract investments to this project type.

### **Governance**

Good corporate governance at Company A was defined by a sustainable use of resources, good management of investment and stakeholder involvement. First of all, hydroelectricity was a sustainable energy source because it was renewable. Second, the project developer was engaged in investments contributing to sustainable development: Financial support was provided for the local school. This would be further discussed under the aspect of quality of life. Third, sustainable use of resources included sustainable waste management. This could consist, for instance, of waste avoidance, sanitary landfills, composting and recycling. In the concrete case of the project activity, the river used by the plant carries many solid residues. The project developer collected them to protect the engine. The collected waste was then handed over to a subcontractor. The subcontractor verbally declared to the project developer that he would not burn the waste. So far, the project developer had an influence on neither how the waste was treated, nor how much waste was generated. The project developer has been actively involved in the design of the social investment plan and its implementation. He provided and provides consultancy for the formulation of the social activities and their execution, sharing his managerial knowledge with the community and taking care of a sound management. The stakeholders were involved in the design of the social investments. They were informed about the project activities and opportunities by the project developer. A dialogue was established through one-by-one negotiations and a comprehensive stakeholder consultation.

### **Quality of life**

Under quality of life, the project developer grouped the aspects school education, water quality and rural development.

School education could be characterized by its quality, coverage and infrastructure. As it was considered difficult for the company to improve the quality of education without the necessary core competences in school education and with limited financial resources at hand, the project developer recognized that he had no direct influence on this variable. Another aspect was the coverage of the area by schools, which could be improved by constructing new schools. However, this was not urgently needed as the existing school could provide sufficient places, but it lacked in basic infrastructure. Therefore, the project developer decided together with the stakeholders to eliminate this shortcoming by the following activities:

- To build a school wall to protect the children and the site,
- To create a computer centre to teach children IT core competences, and
- To construct two new classrooms of which one was intended for the computer centre.

Water quality was also characterized as being in a detrimental stage because of solid residues, chemical components/substances, and (faecal) bacteria. Initially, the project developer declared that he had cleaned the river. Yet, during the focused interview, he was more precise and explained that he had removed only the

solid residues from the water and had no influence on the chemical or bacterial composition of the water.

Company A intended to foster rural development regarding four aspects: access to energy, reduction of local underemployment, local capacity building, and income for local entities. The access to energy was improved through a higher quality of service (fewer blackouts due to the coverage of the local demand by the project activity) and an increased efficiency of energy supply. The plant replaced an inefficient plant owned by the local development NGO to supply the orphanage. With the implementation of the CDM project activity, the orphanage was supplied with electricity free of charge in exchange of the right to use the territory of the NGO for the Company A's operation. Apart from that, the project developer employed formerly underemployed locals in the plant. Local capacity building was achieved by training the staff. A brief training had been provided to the staff who had temporarily worked in constructing the plant, and a more comprehensive training had been provided to the staff working in its operation. The income of the workers increased (for those in construction only temporarily), because the new salary was higher than the one they had earned before in agro-business. Local suppliers benefited from the income from the project activity as Company A decided to purchase the equipment locally. However, the developer was neither able to judge nor control the sustainability of the purchasers who benefited from the project activity. Indirect benefits accrued to the irrigators who had to spend less on solid residue collection from the river, because this work had also been carried out by the project developer.

#### **Stability of the revenue department**

As a last point, the project activity contributed to the stability of the revenue department through its tax payments.

### **1.3.2. Second focused discussion**

#### **1.3.2.1. Development of SMART indicators**

There were just four indicators specified in the PDD: m<sup>3</sup> of solid residue removed from the water, number of employees hired from local population, purchases from local suppliers and donations to the community. All had to be simply positive. Thus, the indicators mentioned in the PDD were neither complete nor SMART.

Corresponding to the activities, indicators were determined during the in-depth interviews (Figure 18). They went much further than those mentioned in the PDD did. The project developer tried to specify the indicators taking into account the SMART characteristics.

#### **1.3.2.2. Definition of resources and inputs**

In the context of setting indicators, the resources and inputs were identified. The contract of the project developer with the community further specified which ratio of the CERs had to be invested in which activity. However, a definition of resources and inputs should not only include financial resources but also human resources (e.g. presentations to be made by the project developer at workshops and conferences). Therefore, further resources consisted in the work force needed (here: the time spent by the project developer himself) and material (e.g. materials to construct the school walls), but the latter was already indirectly covered by the budget (the ratio of CERs to be spent) for each of the social activities specified in the contracts. The human resources needed for the core project activity were specified, as this was relevant information for the criterion of job creation. The

resources needed for further activities (e.g. the cost to collect the solid waste from the water), which were an integral part of the core project activity, were not described in detail, as this would have turned out redundant to the general project planning already carried out by the project developer. These resources were also indirectly related to the sustainability strategy, for they had to be born in any case. The project developer first decided what he wanted to achieve and then how much resources and inputs he was able and willing to provide. As a next step, the project developer had to decide whether the self-set goals could be met with the specified inputs. If not, the project developer would have to reconsider the pathway of sustainable development: either by adjusting the resources and inputs to make the goal achievement achievable or by discarding the respective activity due to limited resources and inputs (in case the initial planning was far too ambitious).

### 1.3.2.3. Stakeholder analysis

The stakeholder analysis was carried out in preparation for the discussion of underlying assumptions. As the project activity was already in an advanced stage, the stakeholders were identified by the two players<sup>112</sup> (PRO and CONTRA) independently to increase the variety of perspectives and to challenge the project developer (e.g. to make apparent possible gaps in the stakeholder analysis). The following stakeholders were identified by the two players:

Identification of stakeholders (PRO)	Stakeholder needs
Shareholders	Financial interest
Financial entities	Financial interest, successful project
Governmental entities	
- MINAG <sup>113</sup>	Compliance with legislation
- MINEM <sup>114</sup>	Compliance with legislation
- Municipality	Compliance with legislation
- CONAM	Compliance with legislation, successful CDM project activities, emission reductions and contribution to sustainable development of the country, recommendations followed, promote the CDM
Commission of irrigators	Easy irrigation, less costs, sufficient irrigation
Neighbours	
- Plant 2: 3 neighbours	Diverse interests, depending on the neighbour Be compensated for (potential) negative impacts of the terrain, one neighbour exceptional: "make life difficult to the project developer", even legal dispute
- Plant 1: 1 neighbour (development NGO)	Energy free of charge
Community (community president, not mayor)	Sustainable development in the community, e.g. support the local school, local employment, improve appearance of the city (e.g. greening the streets)
Suppliers	Contract, good business
Utilities	Buy electricity on the conditions of the utility
Plant 2: utility of city X	
Plant 1: small utility of town Y	
Spot market (sellers and buyers)	Market law: satisfy demand, make profit

<sup>112</sup> PRO: project developer, CONTRA: facilitator

<sup>113</sup> Ministerio de Agricultura = Ministry of Agriculture

<sup>114</sup> Ministerio de Energía y Minas = Ministry of Energy and Mines

Waste company	Contract
FONAM	Successful CDM project activities, emission reductions and contribution to sustainable development of the country, CONAMs recommendations followed by the project activity and compliance with legislation, consult project developers, acquire them as clients, promote the CDM
Potential project developers	Learn from project experience
Staff	Employment, good working conditions and payment, identification with the work
Revenue department	Income (taxes)

**Table 3:** Case A: Stakeholder analysis (PRO position)

Identification of stakeholders (CONTRA)	Stakeholder needs
Community	Use money for investments, interested in deciding how the money is invested, elections
The local development NGO	Energy free of charge, no need to think about energy savings
Irrigators	Enough water for irrigation
Executive Board and UNFCCC (DOEs)	Additional project activities (DOE: liability)
CONAM	Compliance with legislation, successful CDM project activities, emission reductions and contribution to sustainable development of the country, recommendations followed
FONAM	Successful CDM project activities, emission reductions and contribution to sustainable development of the country, CONAMs recommendations followed by the project activity and compliance with legislation, consult project developers, acquire them as clients
The investors (including the international and local bank)	Financial interest, successful project, no negative impacts
Utility/other clients	Buy electricity on favourable conditions, satisfy demand, make profit, keep costs low
Potential project developers	Learn from the experience of others
Staff in construction and operation	Employment, good payment and work conditions, get training
Local suppliers	Contract, good conditions
Revenue department	Taxes to invest
Local government	Compliance with legislation, successful projects, benefits to the community
Population	No negative but positive (direct) impacts
Competitors	Market share, image, benchmarking, learn from experience of competitors
Waste company	Contract, good conditions, easy and low-cost, waste handling

**Table 4:** Case A: Stakeholder analysis (CONTRA position)

#### 1.3.2.4. Discussion of underlying assumptions

The discussion of underlying assumptions was carried out by two players, because due to the company size (one-man-company, not even using a consultant for the project activity) no groups could be built. As it was indispensable for the discussion that both players were well informed on the project activity, and an outsider would first have needed training to be able to take part, the CONTRA position was taken by the author and the PRO position by the project developer. Thus, the author had to assume two functions: to consult the project developer in identifying the stakeholders and formulating his assumptions, and to prepare the role of the opponent. To avoid results being distorted through this double function of the author (e.g. subconsciously taking over ideas from the other player), the author had prepared her part before the meeting.

The PRO and CONTRA players formulated their assumptions regarding the stakeholders' behaviour and weighted the assumptions according to their importance and certainty (denoted by *I* for importance and *C* for certainty in the table below). In the following tables, the pivotal assumptions (those of high importance and high certainty) are highlighted in light grey and the critical assumptions (those of high importance but low certainty) in dark grey. The results were presented and the pivotal assumptions were negotiated. The two players could converge on the set of pivotal assumptions, where *OK* indicates agreement in the table. Further assumptions to be taken into account are those which were identified by the PRO part as of high importance but low certainty. They can pose a risk to the project activity and should therefore be reconsidered; this is indicated by *Attention!* By contrast, those assumptions identified by the CONTRA group as of high importance but of low certainty can be a positive sign for a lower risk of the project activity, indicated by a +.

Assumptions about the behaviour of stakeholders (PRO)	Rating	Result
1) Shareholders: provide equity & freedom to project developer to take decisions	I: 5 C: 5	OK
2) Financial entities: approve financing	I: 5 C: 2	Attention!
3) MINAG: give permit to use water first for execution of construction works and second definitive permit for operation	I: 5 C: 4	OK
4) MINEM: authorization of generation	I: 5 C: 5	OK
5) Community: permit of construction	I: 5 C: 4	OK
6) CONAM: host country approval, clear requirements	I: 3 C: 2	Eliminate
7a) Association of Irrigators: provide opinion (in favour): ex ante	I: 2 C: 4	Eliminate
7b) Association of Irrigators: provide opinion (in favour): ex post	I: 2 C: 2	Eliminate
8a) Neighbours in general: cooperative, buy at good price, no trials	I: 2 C: 2	Eliminate
8b) The local development NGO: cooperative, cooperation, no trials	I: 4 C: 5	OK
9) Community: cooperative, no conflicts	I: 3 C: 4	OK
10) Suppliers: confidence, cooperation	I: 5 C: 2	Attention!
11) Utilities: contract, very transparent, information, experience	I: 5	Atten-

	C: 2	tion!
12) Spot market: favourable market, participation in the COES <sup>115</sup> is worthwhile	I: 5 C: 1	Attention!
13) Waste company: performs well, is reliable, disposes of waste in a sustainable way	I: 3 C: 2	Eliminate
14) FONAM: cooperative, facilitates communication with CONAM, publicity, networking (meet investors)	I: 2 C: 5	Eliminate
15) Potential project developers: cooperation, provide projects, joint investments	I: 1 C: 1	Eliminate
16) Staff: satisfied, take decisions, undertake all operations even maintenance, self-control, stay in the area (do not move to the city)	I: 5 C: 4	OK
17a) Revenue department: tax exception for SSc hydro	I: 4 C: 2	Attention!
17b) Revenue department: spends money in a sustainable way	I: 3 C: 1	Eliminate

**Table 5:** Case A: Assumptions about the behaviour of stakeholders (PRO)

Assumptions about the behaviour of stakeholders (CONTRA)	Rating	Result
1) The local development NGO: uses electricity generated by Company A in an unsustainable way because it is free of charge.	I: 5 C: 4	Refused
2) Community: manages project badly, money is wasted for high-cost material, stylish classrooms, one highly equipped computer instead of several	I: 4 C: 2	+
3) Community: computer room is there but not used because no teacher is there to teach, because no time in the regular schedule, because initiative is lacking	I: 4 C: 2	+
4) Community: classrooms are built but less children come to school because of migration, because less children are born, because more children are working instead	I: 5 C: 2	+
5) Waste company: disposes of the waste in an unsustainable way, e.g. it is left to decay, it is incinerated inefficiently and toxic substances are emitted into the atmosphere	I: 5 C: 5	OK
6) CONAM & FONAM: do not use experience from the project for training (competitors, other project developers → no learning from experience)	I: 3 C: 1	Eliminate
7) Executive board/UNFCCC: PDF on UNFCCC website is damaged (competitors, other project developers → no learning from the experience)	I: 2 C: 1	Eliminate
8) FONAM, the international bank and the local bank: make no effort in promoting the project	I: 3 C: 1	Eliminate
9) Investors: claim money back	I: 4 C: 1	+
10) Utility: changes conditions for one turbine/the plant	I: 3 C: 1	Attention! <sup>116</sup>
11) Association of Irrigators: increases water use dramatically because of new plants cultivated and not enough water remains for electricity generation	I: 4 C: 2	+
12) Potential project developers: do not use experience from Company A and develop less sustainable projects	I: 2 C: 1	Eliminate
13) Staff: just fulfils contract but nothing else	I: 3 C: 3	Eliminate
14) Staff: is frequently absent due to <i>illness</i>	I: 4 C: 2	+
15) Staff: not very accurate in operation, problems with plant and damages occur	I: 4 C: 2	+
16) Staff: did not follow instructions during construction, damages are discovered later	I: 4 C: 2	+

<sup>115</sup> Comité de Operación Económica del Sistema Interconectado Nacional = Committee of Economic Operation of the National Interconnected System.

<sup>116</sup> This assumption was rated by CONTRA less probable and decisive than by PRO, i.e. PRO identified here a higher risk for the project's success than CONTRA.

17) Clients: no new clients can be found	I: 3 C: 3	Eliminate
18) Local suppliers: are not sustainable, e.g. working conditions, informal workers, negative environmental impacts, toxic substances	I: 4 C: 4	OK
19) The revenue department: does not use taxes in a sustainable way, e.g. in subventions where not needed, in inefficient projects/programmes	I: 4 C: 4	OK
20) Local government: does not use the contribution to rural development made by Company A to create new impulses, does not create favourable conditions so that others can follow the example of Company A. Due to SSc of Company A, SD impacts therefore remain minuscule	I: 3 C: 4	Refused
21) Staff: training of staff is not sufficient, staff still not able to perform well	I: 3 C: 1	Eliminate
22) Staff: formerly sub-employed locals have difficulty in following time schedule	I: 3 C: 1	Eliminate
23) Staff: salary is spent in unsustainable way, e.g. on prostitution, casino, alcohol	I: 4 C: 4	Refused
24) Staff: who received training leave their job after a while and migrate to e.g. Lima	I: 4 C: 3	+
25) Utility: does not further invest in infrastructure → the system deteriorates	I: 3 C: 3	Eliminate
26) Local government: disappointment because the project's impact is too small to influence the innovative potential of the region/country	I: 3 C: 4	Refused
27) Community & project developer: lack didactical knowledge and do not design computer room and classroom in the most appropriate way.	I: 3 C: 2	Eliminate
28) Population: the fact that the project developer removes solid waste from the river makes people throw even more waste into the river, as the consequences are not visible	I: 4 C: 4	Refused
29) Population & project developer: water quality in total cannot be improved as the situation of chemical composition and the (faecal) bacteria deteriorates	I: 3 C: 3	Eliminate
30) Local government: rural development is not achieved significantly as professional perspectives for most people are still missing and underemployment is increasing	I: 3 C: 3	Eliminate
31) Association of Irrigators: does not recognize the link between a cleaner river and their business success	I: 3 C: 3	Eliminate
32) Community: not ready to learn from project developer's experience in managing projects	I: 3 C: 2	Eliminate

**Table 6:** Case A: Assumptions about the behaviour of stakeholders (CONTRA)

The assumption to the disadvantage of the local development NGO was rejected by the project developer, as he knew this NGO for its values, which did not match wasting goods. The assumption to the disadvantage of the local government was rejected, as the project developer already knew from the implementation of the project activity that the local government was acting in favour of this type of project activity. The project developer further insisted that the impact of the project activity was big exactly because of its small size, as it demonstrated new working investment opportunities. Finally, the project developer explained that the quantity of waste thrown into the water could not be affected negatively by the fact that he removed the solid waste, as the people causing this pollution were located much further up the river and would not notice any changes.

### 1.3.3. Final feedback of the project developer

The project developer was satisfied with the SMA. He considered the approach applicable to CDM project activities and declared that for further project activities he would be willing to use it. He pointed out that DNA requirements and recommendations should be made more explicit. There would still be a high insecurity regarding which criteria a project activity had to fulfil.

## 2. Case B

The project activity developed by Company B was still in an initial stage. At the time of the case study, it had not yet been approved by the DNA and the EB and thus had not been a CDM project activity, but a candidate.<sup>117</sup>

### 2.1. Preparatory analysis

As the planned CDM project activity of Company B was not yet advanced in the project activity cycle, there was no PDD available for study. However, a preliminary report provided basic project information. The project activity intended to rehabilitate the electricity generation in two caverns in the department where the company was located (called *the Department* hereinafter). These two power plants had been destroyed by a natural disaster. The electricity generated was to be supplied to the SEIN.

### 2.2. Initial interview

According to the project developer, Company B was a public company which was still marked by a hierarchical structure, but the introduction of flatter hierarchies and process-oriented structures was underway. At Company B, four main departments were involved in the project activity: production, commerce, development and administration.

The project activity covered two hydroelectric plants in caves. For the first cave, the financing from the CERs was needed to make the investment option viable. The second cave, which was going to be a small plant (6 MW), would be delayed without the financing from the CDM.

#### 2.2.1. Perception of the CDM

The main reason for pursuing the CDM was the additional income from the CERs. In addition to the financial benefits of the CDM, the company hoped to gain experience with sustainability management through the realization of this project activity as sustainability was becoming an integral part of the business strategy.

#### 2.2.2. National legislation

No specific environmental or sustainability regulation, legislation or programme apart from CONAM's recommendations had to be taken into account for this project activity. An EIA had been carried out consisting in a description of the likely impacts of the project activity. This was mandatory as the project activity was planned for a protected area.

#### 2.2.3. DNA criteria for sustainable development

According to the project developer, criteria to assess a project activity's contribution to sustainable development were needed to measure goal attainment and to obtain feedback. No arguments against criteria were identified.

The project developer was especially in favour of international sustainable development criteria and indifferent towards national and regional criteria. The project developer was of the opinion that international sustainable development criteria would not differ significantly from national or project-specific criteria.

A DNA should define sustainable development criteria based on its experience. These criteria would provide necessary guidelines for the project developers and help the DNA in selecting project activities. The project developer was not sure

---

<sup>117</sup> The project activity is currently still in the pipeline.

whether the DNA had already defined such criteria. Ideally, the criteria should be derived based on worldwide experience, differentiating between project types. They should not be mandatory, but rather provide ideas and directives to support the project developers.

#### **2.2.4. Definition of sustainable development**

The project developer was convinced that there was no universal definition of sustainable development because the conditions of individual cases were likely to differ considerably.

The project developer explained that Company B did not yet know how the two CDM goals – emission reductions and sustainable development – were related, e.g. whether one of them had priority or whether one goal was part of the other.

According to the project developer, both goals could be achieved by the CDM, at least in the case of Company B as sustainable development was part of the business strategy and had to be taken into account in any case regardless of the CDM.

#### **2.2.5. The company's goal system and planning**

In Company B, the time horizon for strategic planning was about 5 years (for mid-term planning). Explicit company goals had been formulated and placed in a rudimentary goal hierarchy. Goal attainment was measured based on indicators. Due to the strategic plan, major goal conflicts could be excluded. The only trade-off identified was the attribution of resources to the different goals.

According to the project developer, CDM goals and company goals influenced each other in a positive way. At the time of the case study, the CDM goals did not explicitly belong to the company goals.

Furthermore, there were no processes in place to optimize or control the implementation of the CDM project activity. There were no structures to take into account sustainability in the daily business. Environmental protection was an issue due to the ISO 14001 requirements; however, the objective was to fulfil them merely for accreditation. Sustainable development criteria and indicators had not been developed.

#### **2.2.6. Sustainability concepts and management systems**

The concept of the three pillars was only known after explanation by the researcher. However, the concept was not yet used in Company B. According to the project developer, the three pillars should be addressed with equal weight. Still, for an enterprise which only complied with the regulation, the economic pillar was the most important one. Extra efforts did not correspond to the current practice of Company B. The CDM Gold Standard and the MDGs were not known to the project developer.

ISO9000 series and ISO14000 series were applied at Company B. The BSC was known but not used yet, although the company was considering it.

#### **2.2.7. Participation**

The project developer considered it necessary for a company to dispose of a sustainability team, which should be independent, but not necessarily interdisciplinary. Company B did not dispose of a proper team for sustainable development issues, just a small part of the ISO group dealt with these questions at the time of the case study. This group was not interdisciplinary, but had direct contacts to the stakeholders.

No special process was used by the company to identify stakeholders. Company B had not yet assumed a proactive role in this regard. The information was gathered

directly from the stakeholders, but in a completely passive way. In other words, stakeholder needs had been identified through stakeholder claims. Stakeholders of the project activity were, first of all, the company itself, representing the main internal stakeholder. As external stakeholders the communities (mainly two) affected by the project activity were identified. Stakeholder needs had been explicitly integrated neither into the definition of sustainability nor into the company decisions yet.

The project developer thought that stakeholders groups participating in a stakeholder consultation/dialogue from a position of ignorance could become disillusioned by the outcomes. Therefore, the project developer opted against a “democratic approach”, as he called it. He considered it feasible for a company to act in favour of stakeholders’ interests without involving them profoundly. Strong participation could provoke too many claims and finally even opposition to the project activity.

Furthermore, the project developer was not in favour of a participative approach to define criteria for sustainable development at international, national or project-specific level and demanded directives to be determined by CONAM. The project developer was not willing to conduct a discussion on the definition of sustainable development during the stakeholder consultation, because the company looked back on a history of unpleasant confrontations with the communities in this area.

### **2.2.8. Learning organization**

Due to the ISO certification, feedback loops had been introduced in Company B, and every three months a general meeting had to take place. The project developer had difficulties in defining a learning organization, but pointed out that due to the ISO certification, the management practice had improved considerably and become more systematic.

### **2.2.9. Potential reactions**

In case of very positive sustainability impacts, Company B would publish the results. For the contrary case, i.e. very negative sustainability impacts, no emergency plan had been developed, as this scenario was very improbable.

## **2.3. Application of the SMA**

### **2.3.1. First focused discussion**

Six people from the company’s management participated in the first group discussion: the general manager, the company’s specialist for civil works, the manager of administration and finances, the development manager, the production manager, and the company’s specialist of integral security.

#### **2.3.1.1. Policy analysis**

The project developers determined the following sustainable development criteria on which the project activity could have an impact:

**Environmental criteria:** biodiversity, emission reductions, reduction of fossil fuel, conservation of local resources (e.g. water), improve health and other environmental issues, water quality, soil quality, waste management, use of renewable resources.

**Economic criteria:** income for local entities (e.g. taxes), technology transfer, employment (temporary), reduce economic burden of energy imports, cost-effectiveness/micro-economic efficiency, growth, investments (energy), sector

development (energy), regional economy, infrastructure (electricity), energy provision.

**Social criteria:** universal primary education (if company decides to support schools), improve quality of life (electricity, education), increase energy access, information sharing, employment (temporary, see economic criteria), participation, improve service availability (water, energy), capacity development (very limited), empowerment (marginal groups, social networks), education and training (company, schools, programme not to throw waste into the river, reduced deforestation).

**Business criteria:** stakeholder involvement, analysis of the life cycle (including waste and by-products → covered by the EIA), cooperation along the value chain (new clients, waste company), organizational learning (technology, market competence, sustainable development).

#### 2.3.1.2. Development of the goal hierarchy and the activities

Company B decided to give equal emphasis to both CDM goals – emission reductions and sustainable development – as a hierarchical relationship was not yet known. Six main areas could be identified where the project activity could contribute to sustainable development: learning/capacity building, good corporate governance, sustainable waste management, environmental protection, local sustainable development and stability of the revenue department (Figure 19).

#### **Emission reductions**

Through generation of hydropower and substitution of fossil fuel in the interconnected electricity grid, emission reductions would be achieved.

#### **Learning/capacity building**

Organizational learning was a current issue for the company. The company was in a process of restructuring and wanted to seize this opportunity of the CDM project activity to introduce new approaches. Information sharing with stakeholders was a key element here. Apart from the obligatory stakeholder consultations of the CDM project cycle, this could be achieved via publication of rich documentation of the project activity and via presentations of the project activity during conferences, trainings and workshops. Company B could further initiate the cooperation with NGOs to create a common understanding and to learn from the experience of the NGOs. Internally, the company could provide training to the employees to build up local capabilities. A national policy on an ethical code for public companies had been established shortly before the case study was undertaken. Thereby, Company B disposed of a new budget for investments in sustainable development. According to the group members, the company should therefore further elaborate sustainable investment plans involving the stakeholders. In addition, the main elements of the SMA originally developed for the CDM project activity could also be used for non-CDM investments.

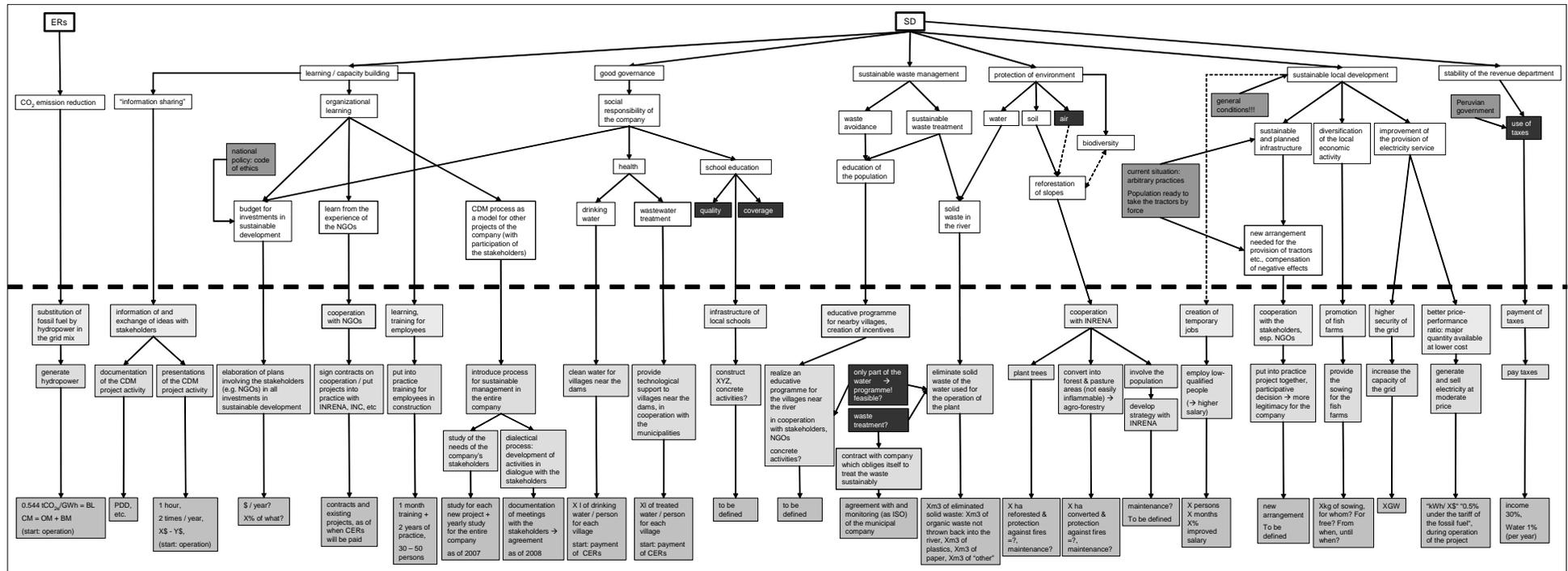


Figure 19: Case B: Pathway of sustainable development

### **Good corporate governance**

The company was determined to assume its social responsibility. A budget now available for investments in sustainable development (see the national policy mentioned under the last point) was an important point of departure for the public company. The company could take over services related to water, which was its core business. Health could be improved by providing drinking water to the villages near the water reservoir and by helping the communities with technical expertise to introduce a system for wastewater treatment. School education could be supported by improving the school infrastructure. On quality and coverage of the education, the company would have no direct influence.

### **Sustainable waste management**

Two main elements could be identified: First, waste avoidance could be promoted by the company through educational programmes combined with an incentive-based policy to make the population reduce waste. The second element was sustainable waste management. Company B could collect solid waste from the river; however, this would only comprise the share of water used for the operation of the plant. Therefore, the educational programme would have to be conducted in parallel. The treatment of the collected waste would have to be sustainable. The type of waste treatment should be determined in the contract with the waste company of the community and fulfilment should be monitored.

### **Environmental protection**

The water quality could be improved through the collection of solid residues from the river, as discussed before. In addition to that, soil quality could be protected through reforestation in the villages and in the countryside (conversion of quickly burning crop into forests and/or agro-forest projects) in cooperation with IN-RENA and the population. Further, reforestation could be beneficial to biodiversity.

### **Local sustainable development**

Sustainable development of the area was strongly dependent on general conditions which were not under the control of Company B. Nevertheless, the company could contribute to the local development in three ways. So far, the company had been lending tractors which were no longer in use to anybody who asked for them. Due to this practice, the company found itself in the midst of a conflict between communities regarding the planning of the development of the area. Infrastructure currently evolved arbitrarily. Therefore, a new regulation for the use of the tractors and a development plan for local infrastructure should be agreed upon involving all stakeholders. Apart from that, the company could support diversification of economic activities by providing the seedlings for fish farms. To qualify this activity as a contribution to sustainable development, obviously, these farms would have to be managed sustainably, i.e. a strategy would have to be defined with the fish farmers. A possible contribution to sustainable development related to the company's core business would be to improve the electricity service by a higher security in the grid and a better quality-price ratio.

### **Stability of the revenue department**

Finally, the project activity had a positive impact on the stability of the revenue department due to the taxes to be paid. The use of the taxes, however, was beyond the company's control.

### 2.3.1.3. Procedural issues emerging during the discussion

Due to accountability considerations, it would have to be determined ex ante for which aspects the company was responsible. Agreements or contracts would have to be set up with the stakeholders and the results would have to be monitored. Taking the concrete example of the irrigators, all affected irrigators would first have to be identified, particularly those who could take decisions influencing the project activity. Company B could, for instance, visit the area and analyze how much water the irrigators needed. Based on this information, an agreement could have to be established between the company and the irrigators. In general, to demonstrate that stakeholder needs were taken into account, the company would have to establish a dialogue and sign agreements with the stakeholders. In the past, however, Company B was subject to negative publicity because of promises made to stakeholders which did not materialize. This was an inconvenient point of departure for the stakeholder dialogue. Furthermore, the company feared to stimulate more and more claims by involving the stakeholders.

### 2.3.2. Second focused discussion

In the second focused group discussion, four people participated: the general manager (who had to leave due to another appointment before the assumptions developed by the two groups were discussed), the trade manager, the production manager, and the company's expert for integral security.

#### 2.3.2.1. Definition of SMART indicators

This element would reach its full strength when the strategy would have been defined. The indicators were to be further developed for this project activity at a later stage as the project was still in the planning phase. First suggestions were formulated (see Figure 19), but these would have to be refined with the stakeholders when the sustainability strategy would be elaborated.

#### 2.3.2.2. Definition of resources and inputs

At this initial stage, the project developer adopted the general recommendation of CONAM to invest about 30% of the CERs into activities related to sustainable development. Further specifications would have to be made during the following stages of the project activity when the pathway of sustainable development would be discussed with stakeholders.

#### 2.3.2.3. Stakeholder Analysis

The relevant stakeholders were identified by the group of participants and their needs were specified:

Stakeholder identification	Stakeholder needs
Company B → Staff → Shareholders (State) → Investors/buyers of CERs	Profitability, image Salary, working conditions Profitability
Communities → near the dams / reservoirs	Drinking water, sanitary water system, elec-

<sup>118</sup> Ministerio de Economía y Finanzas = Ministry of Economy and Finances

<sup>119</sup> Ministerio de Industria, Comercio, Turismo e Integración = Ministry of Industry, Commerce, Tourism and Integration

<sup>120</sup> Instituto Nacional de Recursos Naturales = International Institute of Natural Resources

<sup>121</sup> Instituto Nacional de Cultura = National Institute of Culture

→ Town A	tricity, economic diversification, school education
→ others	
→ Department	School education, electricity, roads
→ Town A	
→ Town B	
→ Town C	
Governmental entities	Compliance with legislation
Ministries: MINEM, MEF <sup>118</sup> , MINAG, MICTI <sup>119</sup>	
Municipality	Requirements and recommendations
CONAM	
FONAM	Information, cooperation, own income
Irrigation commission	Sufficient water in the river
INRENA <sup>120</sup>	Protection of the National Park, reforestation
INC <sup>121</sup>	
Managing unit of the department	Sustainable development
Suppliers	Contract, sell products without extra requirements
Waste treatment municipal company	Contract, without control, continue their business-as-usual (current practice)
Revenue department	Cash receipts, freedom to use funds

**Table 7:** Case B: Stakeholder analysis

#### 2.3.2.4. Discussion of underlying assumptions

After the stakeholder analysis, two groups of two people each were formed. Both groups then formulated assumptions regarding stakeholder behaviour and weighted them according to their importance and certainty.

As in the case of Company A, the following tables show the pivotal assumptions (those of high importance (*I*) and high certainty (*C*)), highlighted in light grey, and the critical assumptions (those of high importance (*I*) but low certainty(*C*)), in dark grey. The results were presented and the pivotal assumptions were negotiated. The two groups could converge on the set of pivotal assumptions, where *OK* indicates agreement. Further assumptions to be taken into account are those which have been identified by the PRO group<sup>122</sup> as of high importance but low certainty. They can pose a risk to the project activity and should therefore be reconsidered, indicated by *Attention!* By contrast, those assumptions identified by the CONTRA group<sup>123</sup> as of high importance but of low certainty can indicate a lower risk of the strategy, indicated by a +.

Assumptions about the behaviour of stakeholders (PRO)	Rating	Result
1) Company B: establish and spread CDM policy, involve the top management on this way	I: 5 C: 5	OK
2) Company B: specialized consulting for communication with communities	I: 3 C: 5	Eliminate
3) Company B, institutions: generate institutional agreements after rapprochement with authorities (Town C, Town B, etc.), INRENA, INC, Irrigators, LIMPUC <sup>124</sup> , NGOs (determined/resolute on the subject)	I: 5 C: 3	Attention!
4) Company B: search public dissemination of the company's CDM plan by interested entities	I: 3 C: 3	Eliminate

<sup>122</sup> Consisting of two managers

<sup>123</sup> Consisting of two managers.

<sup>124</sup> Empresa Municipal de Limpieza Publica del Cusco = Municipal Company for Public Cleaning of Cusco.

5) Company B: succeed in motivating the communities	I: 4 C: 3	Attention!
6) Communities: behave very receptively	I: 4 C: 3	Attention!
7) Company B: dispose of a budget of approx. \$1,500 for works of social good, in periods of 3 years (2010 – 2012)	I: 4 C: 3	Attention!
8) Company B, communities: find an agreed action line with the people of the villages/towns for support of the development project	I: 4 C: 3	Attention!
9) Irrigators: they are not against the project activity, because it is favourable for their necessities	I: 2 C: 2	Eliminate
10) INRENA: due to the sustainable development strategy, INRENA will support Company B in the CDM because an agreement on reforestation will be signed	I: 5 C: 4	Agreement
11) INC will not be inconvenienced by supporting the CDM project activity due to improvement of the conditions of the surrounding lookout points (shared good)	I: 4 C: 3	Attention!
12) By improving the education system, Managing unit of the department will not be inconvenienced by supporting the CDM project activity, health, drinking water	I: 3 C:3	Eliminate
13) MICTI will support CDM under an adequate understanding of sustainable development of the area	I: 3 C: 3	Eliminate
14) the providers are sustainable because they comply with the quality standards and have developed viable CDM project activity	I: 4 C: 3	Attention!
15) LIMPUC will monitor the waste treatment projects, after agreement reached to support it	I: 4 C: 4	Agreement
16) we believe that the revenue department will adequately manage the use of the taxes generated by the CDM project activity	I: 3 C: 3	Eliminate
17) with sustainable projects and under the norms of the SNIP <sup>125</sup> , we believe that MINEM, MEF, MINAG, and MICTI will facilitate the execution of our project to become a CDM	I: 5 C: 5	OK
18) CONAM will recognise our CDM project activity and will declare it adequate in front of national authorities and can facilitate the acceptance by foreign entities, e.g. UNFCCC	I: 4 C: 4	OK
19) FONAM will provide adequate technical consultancy when setting the CDM project activity in train.	I: 3 C: 4	Eliminate

**Table 8:** Case B: Assumptions about the behaviour of stakeholders (PRO)

Assumptions about the behaviour of stakeholders (CONTRA)	Rating	Result
<b>Company B</b>		
1) Staff: the project activity will not be sustainable because of the idiosyncrasy of the workers; it will take a long time until the project will obtain certificates, many requirements have to be fulfilled, and the workers doubt that we will benefit directly	I: 4 C: 4	Refused
2) Shareholders: the State is indifferent	I: 2 C: 4	Eliminate
<b>Communities</b>		
3) Near the dams/reservoirs: the project activity will not be sustainable because of excessive quantity of claims impossible to fulfil	I: 5 C: 5	Negotiate
4) Near the dams/reservoirs: intangible benefits of the short-term investments	I: 4 C: 2	+
4) In the department: effect on the flow of the river at ebb tide	I: 5 C: 4	Refused
5) In the department: social disorder in the village due to presence of workers (strangers)	I: 3 C: 4	Attention!
6) In Town B: social disorder due to workers (strangers), depreciation of local flora and fauna, destabilization of the social order due to increase in prostitution, pregnancies, etc.	I: 3 C: 4	Attention!
7) In Town C: Depreciation of the fruit plantations	I: 3 C: 4	Attention!

<sup>125</sup> Sistema Nacional de Inversión Pública= National System of Public Investment.

Suppliers		
8) The main party of the contract will sub-contract the recruiting to a national company, which will not guarantee adequate working conditions (security, stability, benefits, health, etc.) to the workers.	I: 4 C: 3	Monitor and contract
9) The national suppliers are affected, as the company under contract purchases the material and the staff not locally, although he could use the national ones.	I: 3 C: 4	Attention!
Others		
10) Irrigators: insufficient water quantity – conflict, lack of water/inundation of areas	I: 5 C: 4	Agreement
11) INRENA/INC/Managing unit of the department: negative impact on the ecosystem of the ANP <sup>126</sup> , on possible archaeological remains in the hydroelectric plant, which is using the resources of the ANP, higher requirements for the execution of the work	I: 4 C: 4	Agreement
12) Ministries: nothing against it	-	-
13) Municipal company for solid waste treatment: higher generation of solid residues, which cannot be managed by the municipal company	I: 4 C: 3	Agreement, invest
15) Revenue department: nothing against it	-	-
14) CONAM: possible negative impact on the ecosystem of the department	I: 4 C: 4	OK

**Table 9:** Case B: Assumptions about the behaviour of stakeholders (CONTRA)

### 2.3.3. Final feedback of the project developer

Company B was satisfied with the SMA. It was pointed out that the company liked the way the complex subject of sustainable development was structured, its dynamic character and the possibility to add and stop activities. The overall strategy had been formulated and had to be supplemented with more detailed information. Budgets had to be attributed and a chronogram was needed. Some remaining gaps had to be closed and indicators had to be formulated in more detail. Quicker feedback loops and more involvement inside the company should be pursued. A team responsible for the execution of the strategy would have to be formed. Furthermore, it was mentioned that it would have been very helpful to dispose of an example, a case study, to better understand ex ante how the SMA worked. Company B declared that it would use the SMA for this project activity and considered using it also for future ones.

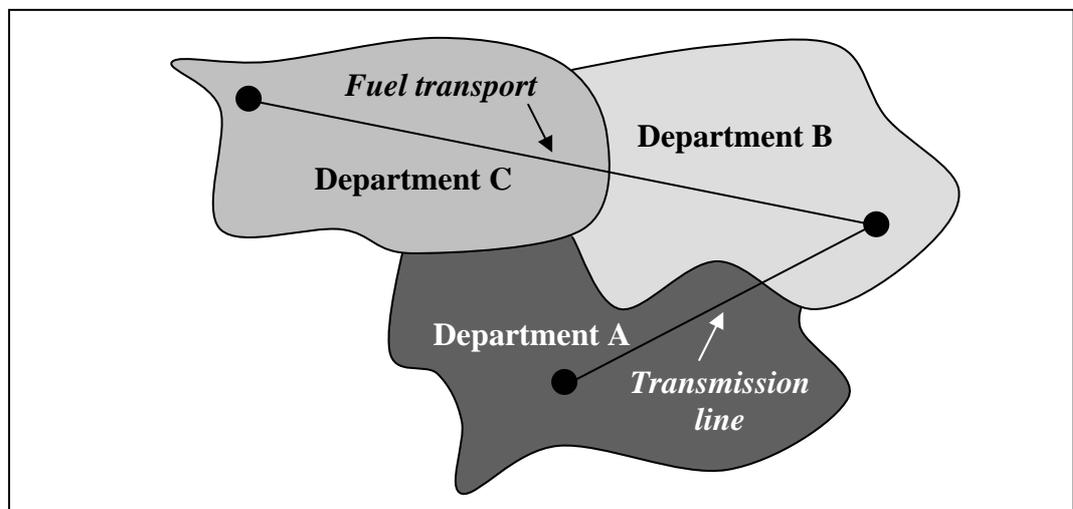
## 3. Case C

The project activity developed by Company C was still in an initial stage at the time of this case study. It had not yet been approved by the DNA and the EB, and was therefore a candidate for becoming a CDM project activity.

### 3.1. Preparatory analysis

<sup>126</sup> Area Natural Protegida = Protected Natural Area.

As in the case of Company B, there was no PDD available yet to study the project activity of Company C. A document presented to CONAM called “final report” provided the basic project information. The project activity intended to construct a transmission line (222km and 138kV) between a hydroelectric plant in one department (*Department A*) and the capital in a neighbouring department (*Department B*). The transmission line would run through the rainforest, but the construction would take place along an existing road, which would minimize collateral impacts on the environment. The project activity implied the following emission reductions: the thermal plant supplying the capital of *Department B* would be shut down and this generation would be displaced by hydropower. The fuel for this plant would no more have to be transported in vans or lorries between a neighbouring department (*Department C*) and *Department B*, which were located at a distance of about 415 km<sup>127</sup>. In addition, the miners working next to the transmission line would no more use their own diesel generators, as the hydroelectricity would be more competitive (see Figure 20).



**Figure 20:** Case C: Schematic illustration of involved departments

### 3.2. Initial interview

Company C was a hierarchically structured, decentralized company. Two main departments were involved in the CDM project activity: the general planning division of the company and the division responsible for the management in *Department B*. In addition to these main divisions, other company units were involved in the project activity: The security and environment unit of the engineering division was strongly concerned with the project activity. Administration, especially the logistics unit, also had to deal with some aspects of the project activity.

#### 3.2.1. Perception of the CDM

From participating in the CDM, the project developer expected, first of all, a contribution to environmental protection via emission reductions. In addition, the project developer wanted to improve the financial viability of its project activity with the income from the CERs. The third benefit of the CDM was that it helped to maintain a sustainable development.

<sup>127</sup> Calculated with [www.map24.com](http://www.map24.com).

### **3.2.2. National legislation**

The relevant legislation for hydroelectric projects also applied to the project activity. Relevant UN regulation for the CDM (e.g. the Kyoto Protocol) as well as CONAM's recommendations and regulations had to be considered. An EIA would become mandatory at a stage when the planning of the project activity would be more advanced. The EIA required an evaluation of the baseline and of possible compensations to maintain the environmental quality. (A budget had to be specified for this purpose.) No strong negative impacts were expected from the project activity although the transmission line passed through a protected area of the rainforest, because the line would be constructed along an existing road. Thus, no new terrain would have to be developed.

### **3.2.3. DNA criteria for sustainable development**

The project developer considered it important to dispose of sustainable development criteria to assess CDM project activities because it enabled to evaluate ex post whether there had been a contribution by the project activity. Companies could still oppose sustainability development criteria if sustainable development was not part of the company goals.

The project developer supported sustainable development criteria at international, national and project level. The criteria at the different levels should be linked to each other, i.e. international criteria should set the frame for national criteria and those again for project-specific criteria.

Because of its expertise, the DNA should define the national set of sustainable development criteria. The project developers thought that CONAM had accomplished this task in the context of supreme decree 29 and the environment law. However, the project developer did not know where these criteria could be found and how they had been derived. According to the project developer, DNA criteria should be derived by experts, but taking into account the applicability to reality. The criteria should set obligatory standards and consist in social and environmental benchmarks. Further, it was considered important to disseminate information on the related benefits.

### **3.2.4. Definition of sustainable development**

The project developer identified the definition of the Brundtland report as the one of universal validity. Company C interpreted sustainability as the main goal and emission reductions as one possibility to achieve this goal. According to the project developer, the two CDM goals – emission reductions and sustainable development – could be fulfilled simultaneously by the project activity of Company C, because the two goals were partially interrelated. Economic sustainability would be enhanced by the CDM project activity, because the local electricity tariff would drop with the use of the cheaper hydroelectricity. The clients (of which many were isolated miners) would benefit from this reduced electricity cost. This would free income which could be reinvested.

To define sustainable development, the company's office for security and environment discussed the concept during its meetings, focusing so far on environmental issues. Some operational criteria and indicators had been identified (in the context of a programme for waste management), and environmental monitoring was undertaken. To decide upon the definition of sustainable development, final approval of the CEO was needed.

### 3.2.5. The company's goal system and planning

The time horizon of strategic planning was up to six years at Company C. Explicit company goals had been formulated and were arranged in a hierarchy. Targets and budgets had been defined for the corresponding activities. The company monitored water and air quality every four months and reported yearly to DGAAE<sup>128</sup> and OSINERG<sup>129</sup>. At the time of the interview, the implementation of the BSC was underway. Goal attainment was measured every four months based on an operative annual plan. Apart from budgetary trade-offs, goal conflicts had not yet been detected. When goal conflicts would emerge, the company would follow its economic priorities, but concrete solutions were also dependent on the market regulator as Company C was a public company.

Sustainable development was an official company goal, but emission reductions had not been considered before the opportunity to realize CDM project activities was known. According to the project developer, the company goals and the CDM goals influenced each other in a positive way because the CDM would make the project activity economically more viable and support environmental protection. The project activity would be optimized under sustainable development aspects by maximizing the price of the certificates of the project activity. An independent consultant would become involved to carry out this task. Thus, optimization was understood in economic terms.

### 3.2.6. Sustainability concepts and management systems

The concept of the three pillars was initially not known. After a short explanation, however, the project developer confirmed that its basic structure was already used by the company. In the ideal case, the three dimensions should be given equal weight; yet, in reality, the economic pillar received more attention. The CDM Gold Standard and the MDGs were not known to the interviewees.

Company C was engaged in sustainability management and used accounting systems. The ISO9000 series were applied, the BSC was being implemented, the implementation of ISO14000 series was underway, and the SA8000 and OSHA18000 (Occupational Health and Safety) were known and partially applied. The SBSC was known but not used, because the BSC had only recently been introduced.

### 3.2.7. Participation

Company C had not yet established a special team dedicated to sustainable development because the workload was still manageable for the security and environment unit. In the company's opinion, a team dealing with sustainable development should be interdisciplinary and have a certain degree of independence. The project developer added that at Company C the CEO took part in the meetings on sustainability.

The internal stakeholders identified were the employees, the main shareholder and the state. The external stakeholders identified were, first of all, the affected communities: *Department B*, especially its capital and a small town 180km away from the capital of the department (called *Town A* hereinafter). Further parties concerned were the miners, the transport and fuel companies (which are public companies), the respective Ministries (including DGAAE), the regional government, the municipalities and two NGOs, INRENA and INADE. Company C did not use

---

<sup>128</sup> Dirección General de Asuntos Ambientales Energéticos = General Management of Environmental Energetic Topics.

<sup>129</sup> Organismo Supervisor de la Inversión en Energía = Supervisory Body for Energy Investments.

a specific process to identify stakeholders and their needs. So far, information had not been gathered directly from the stakeholders, but this would be done during the EIA and the stakeholder consultation. The stakeholder comments would be integrated into the definition of sustainable development and the decision-making of the company. The project developer pointed out that the final strategy had to be based on an agreement with the stakeholders.

A participative approach was considered indispensable at the project level and useful at national and international level, although possibly not always feasible.

A stakeholder consultation was obligatory before the approval of the project activity by CONAM. The company was overall satisfied with the existing practice of stakeholder consultations. Sustainability aspects were covered during these meetings; however, the time was too limited to discuss details sufficiently. The company was willing to intensify this discussion to better integrate stakeholders' perspectives.

Stakeholder involvement was considered unproblematic as long as a company fulfilled its basic tasks: a company had to motivate the stakeholders to participate, and it had to provide knowledge on the project activity. If the stakeholders were appropriately integrated into the decision process, the project activity could proceed smoothly and have positive development impacts.

### **3.2.8. Learning organization**

Company C had implemented feedback loops to evaluate quality. In addition, an annual programme for capacity building had been launched, which comprised training for the employees. According to the project developer, a learning organization, in theory, disposed of permanent feedbacks and adapted the process to changes which were perceived, i.e. a learning company was not rigid. In practice, this signified, for instance, that an adequate information system was used in order to be able to take decisions quickly. In a learning organization, attitudes which build the organization changed.

### **3.2.9. Potential reactions**

If the project activity generated positive sustainability impacts, Company C would be willing to support other communities and use the knowledge for other project activities. In case no sustainability impacts were achieved, the company would analyze the reasons and intensify its efforts. If the project activity provoked considerable negative impacts, the company would compensate the detriments, but this case was very improbable, according to the project developer.

## **3.3. Application of the SMA**

### **3.3.1. First focused discussion**

In the first focus group discussion, four people participated: the manager of planning and management controlling, the administrator of *Department B*, the sub-regional manager of *Department B*, and the manager of the division of engineering and trade in *Department B* (who had to leave for some time during the meeting due to other appointments).

#### **3.3.1.1. Initial ideas**

At Company C, the participants came up with ideas immediately. For a better understanding of the case, these initial ideas will be described first. They led to the formulation of the pathway of sustainable development, which will be presented afterwards.

### **Discarded options**

**Provide local schools with ventilators:** The justification given for this activity was that pupils were not able to concentrate during the day at the high temperatures and the 100% humidity of the Amazonian zone. Initially, this seemed convincing, however, due to the lower electricity cost, the schools were considered able to finance ventilators by themselves. Under these conditions, such an investment would be just an indirect income to the schools and the sustainability effects would be doubtful, as they would depend on the use of these additional financial resources by the schools. Therefore, this short-term and ad hoc investment was rejected.

**Provide material for fire brigade:** The fire brigade in the capital of *Department B* is in a situation of very limited resources, they are even lacking ladders. In the past, Company C made some donations to support their activity. These donations could be increased with money from the CDM project activity. However, it was a pure donation and its long-term impact would have to be monitored. Therefore, it should only be one of the elements of a more comprehensive strategy.

**Build an adventure park similar to *Disney World*:** This idea was rejected because of its doubtful impact on sustainability. Taking into account that most tourists travel to the capital of *Department B* for an adventure trip to the rainforest, an artificial adventure park would not be likely to make them stay in the city, which actually was the intention. In addition, tourists travelling to this city were mainly not those looking for the known, but rather those looking for the unknown. Adventure parks could be found in many places worldwide, they were not typical of this region. Thus, the interest of tourists in such an adventure park was estimated to be rather low and the economic sustainability could therefore not be taken for granted. Apart from this economic argumentation, the idea of an adventure park did not match the concept of sustainable tourism. For instance, it did not promote the conservation of the cultural heritage. An adventure park could be built everywhere; this was not something unique to attract tourists to this region. The park would most probably not be economically viable because the tourists coming to the town did not seek mass tourism. They were rather interested in getting to know the rainforest, which was more exciting to them than e.g. a roller coaster.

**Improve university:** The university located in the capital of *Department B* did not have an scientific reputation comparable to the universities in Lima. Company C could engage in improving the quality of education there, but this idea was rejected as the company regarded itself incapable of doing this directly. It would again result in a type of donation without a strategy formulated by the company.

**Promotion and introduction of new technology in mining:** The mining technology currently used was still rather labour-intensive and inefficient. With the lower electricity price, the owners could be convinced to switch from the old technology to a new automated technology. This would reduce the number of people who would have to work under the bad conditions at the mines. Due to the reduction of jobs in the mining sector, fewer young men would choose this line of work; they would rather orient themselves towards other sectors. However, this would be a long-term process. In the short run, it was likely that the workers lose their jobs. As the workers were not from the region where they were working, but from the mountains, it was not evident what other job opportunities they would have and where they would have to move. Therefore, this strategy was rejected for not being sustainable.

### **Adopted options and concepts**

Sustainable development and sustainable tourism: Based on the identified weaknesses of the other ideas, the company started to think about a comprehensive strategy for the affected region, which responds to stakeholders' needs. This would consist in a package of complementary and coordinated activities to be developed and implemented in dialogue and cooperation with the stakeholders. The main needs identified for this region were economic development and protection of the environmental and cultural heritage. These two main needs had to be considered in an integrative way. Environmental experts, architects (sustainable town planning) and sociologists had to be consulted during the planning and implementation of the diverse activities.

This strategy matched with the type of tourists visiting the region. According to Company C, many adventure tourists with a great sensitivity to ecological and social concerns came to the area. They were interested in learning about the flora, fauna and the culture.

Elements of this sustainable tourism strategy were:

- Conservation of cultural heritage: the old part of the town, the zone which was regularly flooded, the vista point of the mountain, the traditional architecture, and the surrounding villages, promotion of local artesanía for tourism, guided visits to surrounding villages
- Conservation of the ecological heritage: cooperation with the faculty of ecotourism and the department of forest engineering of the university of the city, guided visits without negative impacts on the national parks, agro-forestry
- Accommodation: to be constructed in a sustainable way (no skyscrapers) in a place where they did not adversely affect the daily life of the local population and where they did not change the original character of the town
- Ferryboats: due to a new bridge, which had been constructed over one arm of the river, the ferry at that place was no more profitable and shut down. This activity could be reinitiated at another arm of the river to connect the tourists with the city centre of the capital of *Department B*. This would create employment and prevent the tourists from staying in the old city centre overnight. However, further examination was needed regarding the contribution to sustainable development of this measure due to possible trade-offs (e.g. CO<sub>2</sub> emissions).

Stakeholder involvement: Company C thought about following CONAMs recommendation to dedicate about 30-40% of the CERs to a social investment plan. As the company would be the owner of the project activity, it could be made accountable for the results of its sustainability strategy. The stakeholders would have to be considered as experts in their field and as consultants to the company. They would be invited to articulate their needs to help the company in integrating them into its sustainability strategy.

In the case of Company C, the different stakeholders were rather in conflict with each other. The company would therefore meet up with the relevant key stakeholders one by one before the public stakeholder consultation. The company aimed at formulating a coherent strategy and creating consensus before presenting the strategy in public. Thereby, the company wanted to signal professionalism of the management and create confidence. Further stakeholder comments would be incorporated (and this has to be demonstrated) in the pre-structured investment plan. In the context of this project activity, the company would thereby have the potential to create a consensus between the stakeholders currently in conflict.

Corporate image: During the group discussions, the potential to improve the company image by being better and faster in developing a sustainability strategy for a project activity than private companies was pointed out. The company's proactive attitude could change the idea of public companies mainly considered rigid and unable to foster organizational learning.

### 3.3.1.2. Policy analysis

After the initial free discussion, the project developers determined the following sustainable development criteria on which the project activity could have an impact:

**Environmental criteria:** biodiversity, emission reductions, reduction of fossil fuel, conservation of local resources (e.g. water, sustainable tourism), reduced pressure on local environment (a fossil fuel plant is shut down), improve health and other environmental issues (less contamination of water, less dehydration of the people, no noise pollution near the old plant anymore), air quality, soil quality (around the old plant), waste management (no new contaminated material of the old plant), use of renewable resources, reduction of other pollutants (toxic substances such as oils and lubricants).

**Economic criteria:** income for local entities, positive impact on balance of payments, technology transfer, employment (temporary), cost-effectiveness/micro-economic efficiency, growth (of the region), investments (in energy), sector development (e.g. energy, tourism), regional economy, infrastructure (probably), energy provision.

**Social criteria:** promote gender equality and empower women, improve quality of life (electricity, education), increase energy access, good governance, information sharing (with the stakeholders, CDM), employment (temporary, see economic criteria), participation, improve service availability, capacity development (inside the organization and in collaboration with stakeholders), security (less risk of fire and spillage), rural development (and urban development).

**Business criteria:** stakeholder involvement, link strategy with daily processes, organizational learning (technology, market competence, sustainable development).

### 3.3.1.3. Definition of the goal hierarchy and the activities

Emission reductions were considered as a sub-goal of sustainable development. Five further areas where the project activity could contribute to sustainable development were identified: health, local sustainable development, protection of the environment, security and learning (Figure 21).

#### **Health**

Health was dependent on many factors. Two aspects can be positively influenced by the project activity. As the hydropower plant did not produce the noise and the emissions of the fuel plant, related diseases could be reduced. Due to water savings by the company, but above all due to the reduced electricity price (electricity is need for processing the water), more drinking water would be available, which would reduce dehydration and contamination.

### **Local sustainable development**

First of all, the local development would be supported by the reduced electricity tariffs. Money would be freed and could be invested. However, the company had no influence on how people invested the money. Thus, purely sustainable investments could not be assumed without further analysis. Company C intended to invest in a sound development programme for the area, which should be elaborated in dialogue with the stakeholders. The company wanted to support exploitation practices adapted to local conditions, such as agro-forest activities. These projects could be realized in cooperation with the department of forest engineering of the capital of the department. In addition to that, the company planned to support sustainable tourism. This comprised a sustainable infrastructure and city planning, i.e. an architecture which respected the traditional face of the city and followed ecological urbanism. In practice, this could mean that e.g. only small streets could be built. Hotels could only be erected outside the old town centre to protect the cultural heritage and should have few floors only to fit the surroundings. Ferry-boats left unused since the building of the new bridge could be moved to another part of the river to connect the new hotel complex with the old town centre. These are only initial ideas which would have to be discussed with experts in sustainable tourism and town planning. Part of the strategy was a move away from mass tourism to eco-tourism. This included, for instance, the conservation of the panoramic view over the city and of nature as well as information and ecological instruction for tourists and visitors. This project could be realized in cooperation with the faculty of eco-tourism and biodiversity and with the department of forest engineering of the city. Students could work as tour guides. Apart from the natural heritage, the cultural heritage also had to be conserved. This was why areas of native/traditional life should be protected. Guided tours to the old town could be organized, but no hotels should be constructed in this part of the town. More tourism in the city would also offer more opportunities to sell the traditional artesanía; thus, generate further income for locals.

### **Protection of the environment**

The protection of the environment referred to the protection of the natural resources (water, air, soil) of the country as well as to sustainable waste management and biodiversity. Biodiversity should be maintained in the context of sustainable tourism. Waste would be avoided by the project activity, as the dangerous material formerly generated by the petrol plant would be reduced to a minimum (the plant is only maintained for emergencies). Local contamination would be reduced due to the closure of the old plant, which had positive impacts on the environment, mainly on air and soil quality.

### **Security**

Security would be improved because the fire risk would be considerably reduced due to the closure of the old plant. However, general security was dependent on various other factors the company could not influence.

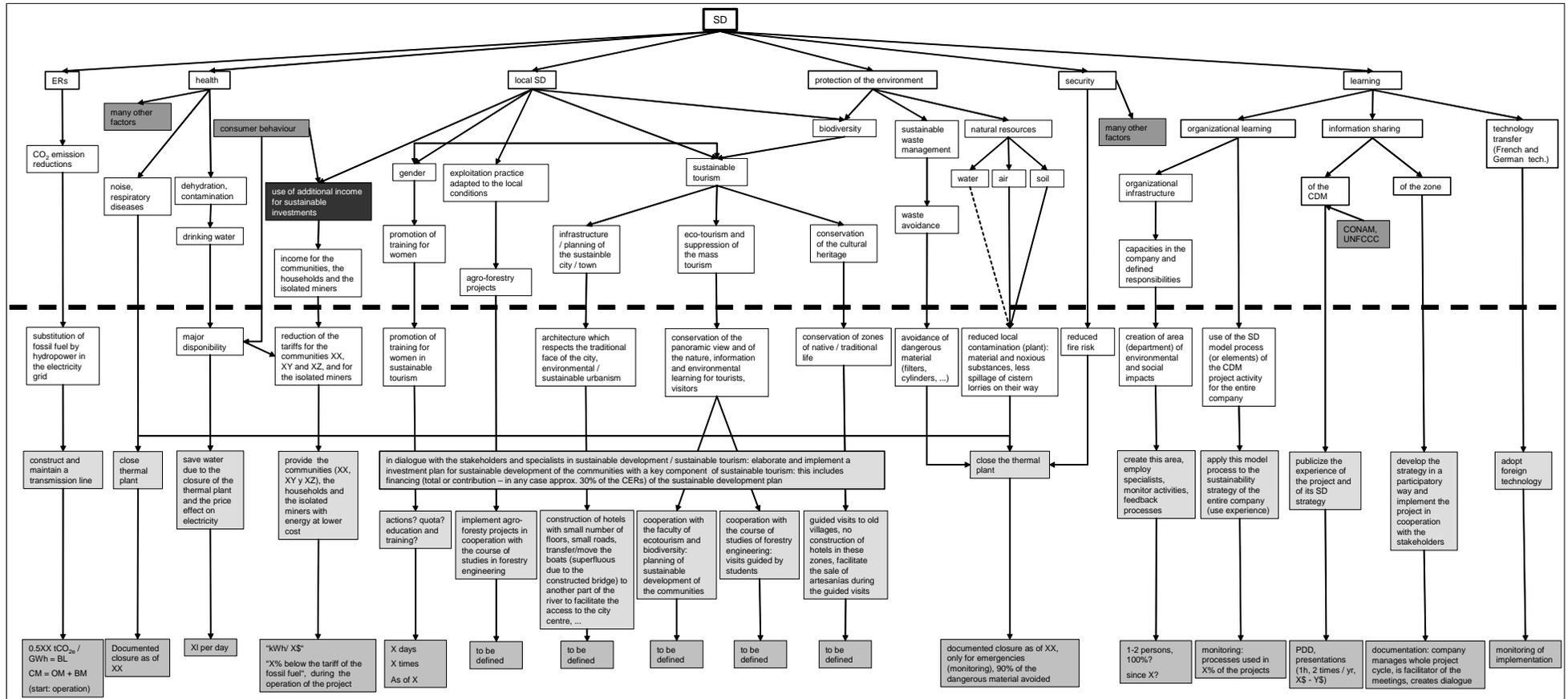


Figure 21: Case C: Pathway of sustainable development

## Learning

Organizational learning was intended to be one of the outcomes of the project activity. In order to apply the SMA and to realize these investments in sustainable development, the company would have to change structurally. Capacities would have to be mobilized and built up. Responsibilities would have to be clearly defined. In this context, an area of environmental and social impacts would have to be formed to plan, monitor and provide feedback. In addition to that, elements of the SMA could be used for the sustainability strategy of the entire company. Apart from that, information sharing would have to be supported to promote learning outside the company. The experience with the CDM would have to be publicized through the documentation of the project activity and through presentations at conferences, seminars and workshops. Information sharing with stakeholders would also take place during the consultations and dialogues. Finally, Company C would acquire technological knowledge by using French and German technology in the project activity.

### 3.3.2. Second focused discussion

In the second focused discussion group, four people took part: the manager of planning and management controlling, the manager of integral security and environment, the administrator of Department B, and the sub-manager of Department B.

#### 3.3.2.1. Definition of SMART indicators

As in the case of Company B, the indicators would have to be further developed, because the project activity was still at an initial stage (planning phase). Some suggestions had been developed (see Figure 21), but would have to be refined with the stakeholders when the sustainability strategy would be elaborated.

#### 3.3.2.2. Definition of resources and inputs

At this initial stage, the project developer adopted the general recommendation of CONAM to invest about 30% of the CERs in activities related to sustainable development. Further specifications would have to be made during the following stages of the project activity when the pathway of sustainable development would be discussed with stakeholders.

#### 3.3.2.3. Stakeholder analysis

The relevant stakeholders were identified by the group and their needs were specified:

Stakeholder identification	Stakeholder needs
Company C → involved departments → State = shareholder → employees, workers	Profitability, more generation, more consumption
Communities/affected population → Department B → its capital → Town A, B, C, and other towns	Urban-rural, lower electricity costs, cannot consume as much as they want, potential increase, development, water only for 6 hours per day due to cost of treatment which depends on electricity costs, school has no ventilators (due to electricity

<sup>130</sup> Dirección General de Aguas = General Water Management.

<sup>131</sup> Fondo Nacional de Financiamiento de la Actividad Empresarial del Estado = National Financing Fund of the State's Business Activity.

<sup>132</sup> Instituto Nacional de Desarrollo = National Development Institute.

Miners	cost), university has lower standard than universities in big cities, claims regarding noise of thermal plant, security of the plant (fire), firemen do not have necessary material, few income sources (above all agriculture, wood/timber, chestnuts, gold), no tourism
Transport companies	Low-cost electricity
Fuel companies	Do not want to lose their market (but it will happen, it is a known and accepted fact)
Ministries → MINEM → DGAAE → MINAG → DGA <sup>130</sup>	Investment, profitability, conformity with laws EIA
Regional governments, town council	Investment
FONAFE <sup>131</sup>	Efficiency, transparency, compliance with law, profitable investments
CONAM	ER and SD, 3 requirements, recommendations
OSINERG	Close the thermal plant
INRENA	Not cut trees, protect nature, rainforest
INADE <sup>132</sup>	Drinking water, SD for the region
Consultant	Contract, payment

**Table 10:** Case C: Stakeholder analysis

#### 3.3.2.4. Discussion of underlying assumptions

For the discussion of underlying assumptions, two groups of two people each were formed. Both groups then formulated assumptions regarding the stakeholder behaviour and weighted according to their importance and certainty.

As in the cases before, the following tables show the pivotal assumptions (those of high importance (*I*) and high certainty (*C*)) highlighted in light grey, and the critical assumptions (those of high importance (*I*) but low certainty (*C*)) in dark grey. The results were presented and the pivotal assumptions were negotiated. The two groups could converge on the set of pivotal assumptions, where *OK* indicates agreement. Further assumptions to be taken into account are those which have been identified by the PRO part as of high importance but low certainty. They can pose a risk to the project activity and should therefore be considered, indicated by *Attention!*. By contrast, those assumptions identified by the CONTRA group as of high importance but of low certainty can indicate a lower risk of the strategy, indicated by a +.

Assumptions about the behaviour of stakeholders (PRO)	Rating	Result
Company C		
1) Reinvestment of financial resources with sustainable policies	I: 4 C: 5	OK
2) Disposes of the staff able to sustain the project	I: 4 C: 3	Attention!
3) Will carry out activities to convince the communities	I: 5 C: 4	OK
4) Knows the social reality and has negotiation capacity	I: 4 C: 4	OK
5) The employees of Company C are predisposed for changes	I: 4 C: 4	OK

6) Relies on budget for training	I: 4 C: 5	OK
7) Incipient learning related to the social responsibility aiming at its systematization	I: 4 C: 5	OK
8) Existence of PAMA <sup>133</sup> policies	I: 4 C: 4	OK
<b>Communities/affected population</b>		
9) The communities will accept the project because it will benefit their economy, offering them bigger resources	I: 5 C: 4	OK
10) The communities dispose of handicraft (artesanía)	I: 4 C: 4	OK
11) Biodiversity capital of Peru	I: 4 C: 5	OK
12) Relies on 7 nature reserves and natural parks	I: 4 C: 5	OK
13) Relies on faculty of ecotourism	I: 5 C: 5	OK
14) Relies on faculty of forest engineering	I: 5 C: 5	OK
15) 70% of the population is younger than 50 years	I: 4 C: 3	Attention!
16) There is a major female population	I: 4 C: 3	Attention!
<b>Ministries</b>		
17) Realize the national interconnected system	I: 5 C: 5	OK
18) Responsibility for managing the Amazon region towards the world	I: 4 C: 4	OK
19) Compliance with environmental goals/targets	I: 4 C: 3	Attention!
<b>Regional government</b>		
20) Supports the objectives of the region	I: 3 C: 3	Eliminate
21) Reduces migration of persons	I: 4 C: 3	Attention!
<b>Local government (municipal)</b>		
22) Supports the objectives of the local government	I: 3 C: 3	Eliminate
23) Supports the increase in tourism	I: 5 C: 4	OK
<b>Other institutions</b>		
24) INRENA, DGA, OSINERG, INADE: support their institutional objectives	I: 4 C: 4	OK
25) Consultant: the consultant is competent	I: 3 C: 3	Eliminate
26) CONAM: spreading by using the programs programmes of social responsibility and sustainable development	I: 5 C: 4	OK

**Table 11:** Case C: Assumptions about the behaviour of stakeholders (PRO)

<b>Assumptions about the behaviour of stakeholders (CONTRA)</b>	<b>Rating</b>	<b>Result</b>
<b>Company C</b>		
1) CDM financing (withdraw funds)	I: 4 C: 2	+
2) Human resources: increase in staff, opposed to staff training	I: 4 C: 4	Refused
3) Logistics: major cuts in processes, resistance to more processes	I: 4 C: 2	+

<sup>133</sup> Programas de Adecuación y Manejo Ambiental = Programmes for Environmental Adaptation and Handling.

4) Staff: do not want to do extra work anymore	I: 4 C: 2	+
5) FONAFE: increase of budget, of staff	I: 5 C: 4	Refused
Communities/affected population		
6) Oppose purposes of the income from CDM in the project activity, use for communal hall	I: 4 C: 4	OK
7) Oppose the project of the transmission line because it passes through their ground	I: 4 C: 4	OK
8) Town B, Town C: oppose the CDM project activity because they will not benefit directly	I: 2 C: 2	Eliminate
9) Tribes oppose changes	I: 2 C: 4	Eliminate
Regional government		
10) Opposes the project because they want to manage the project themselves	I: 5 C: 5	OK
Municipal government		
11) Opposes the project because they demand a monetary participation in the CDM	I: 4 C: 3	+
Other institutions		
12) INRENA opposes the project of the transmission line, deforestation	I: 4 C: 2	+
13) INRENA opposes the project activity, population growth	I: 4 C: 2	+
14) MINEM etc.: Obstacles: lack of interest in the approbation of the CDM project activity, delay in approval	I: 4 C: 2	+
15) MINEM etc.: Observations on the EIA of the transmission line, delay of approval	I: 4 C: 2	+
16) OSINERG: Observations in the process of operation	I: 2 C: 4	Eliminate
17) INADE opposes the CDM project activity (special project for <i>Department B</i> ), want to manage the project and present it themselves due to its viability	I: 5 C: 5	OK
18) CONAM: Delay in approval	I: 5 C: 2	+
19) Consultants: Higher share of the sale of carbon credits	I: 2 C: 2	Eliminate

**Table 12:** Case C: Assumptions about the behaviour of stakeholders (CONTRA)

### 3.3.3. Final feedback of the project developer

Company C was satisfied with the SMA. The project developer explained that it helped the company to quickly formulate strategies. Further, the comprehensive analysis helped to check whether an idea matched the sustainability concept. Finally, it helped to consider and involve all stakeholders. The project developer found the SMA useful for internal application, but considered it even more beneficial to the consultations of and dialogues with the stakeholders. The project developer declared that the company would use the SMA for this project activity and considered using it also for future ones.

This chapter presented the raw material obtained from the case studies. In the next chapter, the data will be analysed comparing the status before and after the case studies had been conducted.

## Chapter VI – Analysis of case study data

The SMA has been developed to meet the needs of the CDM project developers and those of the DNAs at the same time. In this chapter, the application of the SMA during the case studies will be analyzed, taking into account the project developers' points of view.<sup>134</sup>

Their perceptions changed during the case studies. During the initial interviews, background information was collected on the company structure and existing procedures. A first impression of the concept of sustainable development was obtained. During the first focused group discussion, this concept was elaborated. A discussion of sustainable development criteria followed the policy analysis. Finally, during the last focused group discussion, the pathway of sustainable development was consolidated, indicators were specified and the discussion of underlying assumptions was held. The concept of sustainable development and the classifications were adjusted several times by the project developers until the end of the case studies. This illustrates that the establishment of a definition of sustainable development needs time. Adjustments to the sustainability strategy have to be made possible to repeatedly approach the real concepts and causal relationships from different angles.

### 1. Before the use of the SMA

#### 1.1. Information provided by the PDDs

The PDDs in Peru have to state the activities planned by the project developer and designated to achieve sustainable development. The PDDs include a monitoring plan (SDMP) to track goal achievement, as recommended by the Peruvian DNA. In this sense, Peruvian project activities disclose more information than internationally required.

However, the indicators provided are not SMART (specific, measurable, action-oriented, realistic and timed), as shown in the previous chapter by the example of Case A. The time component is not specified. The set of indicators is incomplete, and those specified only have to be *positive* for successful goal achievement. The CDM requires *a contribution* to sustainable development, which explains why a positive value is already understood as goal achievement. For the sake of transparency, however, the indicators should be further specified. Otherwise, a proposal may appear promising, but the implementation may be deceiving when the impacts achieved are minuscule (e.g. employment generation is the criterion, but only one unskilled part-time job is created).

In addition to that, the PDDs are not explicit enough to make a third party understand the underlying theory, i.e. how sustainable development is achieved. The concepts remain too vague for evaluation. The confusion and mistrust created by an unclear description of the sustainable development strategy has a negative impact on the perception of the project activity, which is most probably not the project developers' intention.

#### 1.2. Company types

##### 1.2.1. Formal characteristics

The three cases differ, first of all, in the following formal characteristics:

---

<sup>134</sup> It is not analyzed how much the project activities (might) contribute to sustainable development, as this aspect is not part of the research question.

Variable	Case A	Case B	Case C
Stage of project activity	Registered CDM project activity, operating, no CERs issued	Planning phase	Planning phase
Size of project developer	1-man company	79 employees	252 employees plus 20 fixed-term workers
Technology of the project activity	Hydroelectric run-off-river	Hydroelectric generation in caves	Transmission line
Size of project activity	Small-scale	Regular	Regular
Private or public business	Private	Public, in process of privatization	Public, in process of privatization
Hierarchical structure	None	Top-down	Top-down
Planning horizon	Short-term	5 years	6 years
Feedback loops and quality management	No feedback loops, quality managed based on experience and knowledge	Feedback loops in the context of ISO	Feedback loops, annual programme for capacity building (= ISO or more?)
Concept of a learning organization	Clear idea	No clear idea	Detailed definition

**Table 13:** Formal characteristics

Case A is a micro-enterprise (one-man company) managed by the owner, and the project activity is of small scale. The project developer had already some experience with the CDM as the project activity had been registered and was already operating. There was a short-term planning horizon and no feedback loops implemented, the project developer relied on his experience and knowledge and had a clear idea of a learning organization. Case B was a medium-sized enterprise in process of privatization. The CDM project activity was of regular size and still in its planning phase. The planning horizon was 5 years and the company based its quality management on ISO norms. The concept of a learning organization was not clear to the project developer. Case C was a bigger public company also in process of privatization. The CDM project activity was also of regular size and still in its planning phase. The planning horizon was 6 years and the company disposed of several programmes for quality management. The company did not bring these activities into relation with the ISO norms, although there might have been a link. Company C was able to provide a detailed definition on what a learning organization should look like.

### 1.2.2. Knowledge and experience

The project developers did not identify any specific national environmental or sustainability regulations, legislations or programmes. They only referred to the Kyoto Protocol and to the DNA. However, the project developers were unaware of the nature of possible criteria or recommendations of the DNA. This might be due to the fact that development priorities in Peru were exposed in frameworks, but had mostly not been translated into concrete legislation, regulation or programmes. Furthermore, the project developers were unaware of the CDM Gold Standard or the MDGs. They were familiar with the three dimensions of sustainable development, but knew them only passively. This indicates that the project developers have difficulties in comprehending the national priorities, and external input e.g. from the DNA is needed for element 1, the policy analysis.

All three project developers had some experience with EIAs. The project developer of Case A remarked, however, that, for small-scale CDM project activities, it was not clear under which conditions a declaration of impacts or an EIA was required. Further DNA guidance would be helpful here. The project developers of Case B and C were not well informed about the current practice of stakeholder consultations for CDM project activities, but Company C had some general knowledge about stakeholder consultations in Peru. Company A was well informed due to its experience. In sum, the level of information was not very high and indicated that the project developers lacked knowledge about the political debate of sustainability issues.

Variable	Case A	Case B	Case C
Legal aspects and political programmes	None	CONAM	KP, CONAM
SD criteria or recommendations by the DNA	None known	None known	None known
The concept of the three pillars of SD	Not known	Passive knowledge	Passive knowledge
CDM Gold Standard	Not known	Not known	Not known
MDGs	Not known	Not known	Not known
EIA experience	Yes	Yes	Yes
Procedures of stakeholder consultations for the CDM	Informed	Not informed	Not informed

**Table 14:** Knowledge and experience

### 1.2.3. Perception of goals

Company A pursued one clear goal, which was profitability, and the CDM goals did not belong to the company goals. Regarding the CDM, first priority was attributed to the emission reductions due to the income generation via CERs and as a second priority, further contributions to sustainable development were targeted. Company B and C both disposed of explicit company goals, which were not disclosed to the author, but kept confidential. While Company B stated that the CDM goals were not part of the company goals and the relationship among the CDM goal was not yet clarified, Company C pointed out that sustainability was the main goal of the entire company and emission reductions were one option to strive for it. All three project developers were convinced that the two CDM goals – emission reductions and sustainable development – could both be achieved by the CDM. Company A and C recognized inherent links while Company B stated that pursuing sustainable development is a general requirement of its company strategy.

At Company A, goal conflicts were no major issue as profitability was the only goal pursued. Company B managed the goal achievement via a strategic plan and states that, apart from budgetary constraints, goal conflicts would not emerge. Company C was already more advanced in this regard, as the company had tackled strategic management by introducing the BSC. As in the case of Company B, Company C detected only budgetary trade-offs. Although pursuing sustainability in all three dimensions, Company C clarified that, in case of conflicts between the dimensions, the economic pillar had to predominate in decisions.

In addition to the questions directly addressing the goals pursued, the expectations regarding the CDM highlight further motivations of the companies. Company A pointed out an aspect which was also often raised in other sections of the interview: the good contacts with the community and the stakeholders. The project developer stated that it was one of the most positive impacts of the CDM, that the project activity was recognized and supported for its contributions. Furthermore,

the project developer was eager to gain experience for other project activities (personal learning). By contrast, Company B stated openly that the additional income was the main motivation for undertaking a CDM project activity, while it was also a good opportunity to learn more about sustainability management. Company C provided a clear hierarchy of motivations for the CDM project activity: first, emission reductions due to the kind of mechanism; second, the financial aspects due to the additional income; and third, the contribution to sustainable development.

Drawing on experience with his project activity, the project developer of Company C recognized positive as well as negative interdependencies between the company goal and the CDM goals. The other two companies saw only positive interdependencies.

In summary, Company C followed the most advanced approach, but had no practical experience with the CDM yet. Company B was the least informed of the three companies and still needed to refine its priorities. Company A had a straightforward and pragmatic approach and could already rely on its experience with CDM project activities, which sharpened its view for drawbacks. Although profitability was the company's main goal, it was not what the company especially expected from the CDM. Instead, it pointed out the support from the community and stakeholders as the main point. Company B clearly emphasized the income aspect of the CDM and sustainable development as a secondary objective. Company C showed that different priorities existed simultaneously: Company-wide, the sustainability goal prevailed, while emission reductions and additional income were more important when the single CDM project activity was considered on its own. This shows that the CDM was not considered, first of all, for its sustainability aspects, although the respective company adopted a rather advanced position regarding the sustainability debate.

Variable	Case A	Case B	Case C
Main company goals	Profitability, not CDM goals	Explicit company goals formulated (confidential), 5 main goals, not CDM goals	Explicit company goals formulated (confidential), main goal: SD, CDM goals included (ERs as sub-goal of SD)
Relation of the CDM goals	ERs first, SD second	Not yet known	SD first, ERs second
Can both CDM goals be achieved by the CDM?	Yes, they are linked (for hydro-power at least)	Yes, SD to be taken into account in any case by the company <sup>135</sup>	Yes, because partially interrelated
Expectations regarding the CDM	Contacts with community and stakeholders facilitated, experience for future CDM projects	Income, gather experience in sustainability management	Environmental (GHG), financial (CERs), sustainable development
Management of goal conflicts	1 goal, no conflicts	Strategic plan, no conflicts apart from budgetary trade-offs	Implementation of BSC underway, no conflicts apart from budgetary trade-offs, economic dimension priority in case of

<sup>135</sup> This comment suggests that ERs are part of SD, but in the pathway of sustainable development, this goal hierarchy was not reflected. This could be because this is understood as the company-wide goal hierarchy, and those in the pathway are specific to the CDM project activity.

			conflicts between the pillars
Interdependencies between company goals and CDM goals	Positive and negative	Positive	Positive, cross-cutting (between the three dimensions)

**Table 15:** Goals

### 1.2.4. Operationalization

The step from the goals to operationalization was crucial for the implementation of the sustainability concept. Congruent with its business goal, Company A pursued an efficiency strategy, i.e. all activities undertaken were optimized through cost reduction. As the project activity of Company B was not very advanced yet, no concept of its optimization it had been developed so far. Surprisingly, Company C optimized the CDM project activity also only with regard to the financial aspects, not going for efficiency, but for a “good deal” on the market.

Company A was not familiar with any management systems, the reason probably being its very small scale. Company B had a general idea about the most well-known management systems and applied the ISO standards. Company C was well informed about diverse management systems, applied ISO standards and partially SA8000 and OSHA18000<sup>136</sup>, and knew about the SBSC.

At Company A, monitoring of production and waste was already taking place, and more monitoring was to follow when the social activities planned would be implemented. Following the statement of Company B, monitoring of aspects related to sustainable development was not undertaken. This could be true, but was not estimated very probable due to the certification of ISO standards. This response rather indicated that Company B was not yet clear about what was related to sustainable development and how. By contrast, Company C considered the monitoring of water and air quality as related to sustainable development.

This section showed again that Company A pursued a pragmatic approach focusing on cost aspects. Company B applied generally recognized standards but, apart from that, lacked orientation. Company C showed here a contradictory image: On the one hand, the company was well informed, rather advanced in the use of management systems and able to identify existing structures related to sustainable development. On the other hand, when optimizing the CDM project activity, the company fell back on the simple income orientation.

Variable	Case A	Case B	Case C
Optimization of CDM project activities	Cost reduction	Nothing	Maximize price of certificates
Management systems known	None known	ISO9000 and 14000 series applied, BSC known but not applied	ISO9000 series applied, BSC being implemented, ISO14000 series underway, SA8000 and OSHA18000 known and partially applied, SBSC known, not yet used
Monitoring of SD	production and waste (so far)	None	Water and air quality (so far)

**Table 16:** Operationalization

<sup>136</sup> The company was able to freely associate a standard not mentioned by the interviewer. This showed again that the company already dealt with sustainable development.

### 1.2.5. Existing concepts

None of the three companies was well informed about the conceptual debate on sustainable development, but Company C cited the prominent definition of the Brundtland Commission.

To define sustainable development, Company A and B had no special process implemented, the project developer of Company A relying on its own implicit concepts and Company B passively responding to claims. Company C had nothing established yet, but underlined that structures were being discussed.

The project developers were all generally supportive of sustainable development criteria: The micro-enterprise Company A emphasized project-specific criteria in form of minimal standards. The complying Company B did not think there were major differences between international, national and project-specific criteria and therefore opted for international criteria as non-binding guidelines<sup>137</sup>. However, Company B contradicted itself as it also mentioned during the interview that there was no universal definition for sustainable development due to different conditions at the project level. This showed that the concepts had not yet been sufficiently clarified. The rather proactive Company C stated that the criteria had to be linked becoming more and more concrete towards lower levels and should consist in mandatory benchmarks.

The project developers were unanimously convinced that the DNA should define sustainable development criteria for CDM project activities.

Variable	Case A	Case B	Case C
Conceptual debate on SD	Not known	Just vaguely known	Just vaguely known, Brundtland definition known
Process to define sustainable development	No special process, sound investment (income to company, benefits to stakeholders), stakeholder involvement, veto right of company	No structures established, respond to claims	Structures being established, discussion process launched
Scope of criteria needed	First project-specific, then international, indifferent to national	First international, indifferent to others	At all levels
General or specific sustainable development criteria	Case-by-case, context-specific (no universal definition)	No major differences between international, national and project-specific criteria, technical differences according to project type (contradiction to statement that there was no universal definition for sustainable development as individual cases may differ)	International, national and project-specific criteria to be linked, top-down becoming more concrete (no universal definition apart from Brundtland)
Type of criteria needed	Minimal standards	Non-binding guidelines	Mandatory benchmarks
Should the DNA	Yes, to be more	Yes, to provide guidance	Yes, because of

<sup>137</sup> The company fears the confrontation with stakeholders, prefers to simply comply with directives of the state because the outcome is controllable.

define SD criteria for CDM project activities?	objective in selecting project activities	and to select project activities	its expertise
--	---	----------------------------------	---------------

**Table 17:** Existing concepts of sustainable development

### 1.2.6. Team for sustainable development

None of the companies disposed of a team for sustainable development. It is obviously no option for Company A due to project and company size. But also for the other companies, the project developer generally opted for leaving this task with the company owner as long as manageable. This was an attitude which could have been expected from an owner-managed company.

Company B considered an independent team necessary, but it did not see why it should be interdisciplinary. This illustrated that the company had not yet internalized the complexity of the sustainability concept. To date, the ISO group which was in direct contact with stakeholders dealt with sustainability issues in Company B.

Company C considered an interdisciplinary team necessary. The team should also be independent to a certain extent. The team for environment and security assumed this task to date. At Company C, the CEO took part in all these meetings, which indicated on the one hand that a certain importance was attributed to the topic, but on the other that a strong control was exercised from the top.

Variable	Case A	Case B	Case C
Independent and interdisciplinary SD team necessary?	Not needed, matter of the owner	Yes, independent but not necessarily interdisciplinary	Yes, interdisciplinary and independent to a certain extent
Current status	None	None, just ISO group with direct contact to stakeholders	None, so far assumed by the team for environment and security
Sustainable development a "matter for the boss"	Yes (has to be someone who can make decisions)	Only indirectly (mentioned at the very beginning that SD was a task which had been neglected for a long time and which had urgently to be assumed by the new management)	Yes (CEO takes part in all meetings of the group currently dealing with this topic)

**Table 18:** Team for sustainable development

### 1.2.7. Stakeholder participation

Company A and C recognized that a successful stakeholder involvement depended on how the company communicated its strategy, while Company B saw problems, refused to involve stakeholders and did not want to discuss sustainable development during stakeholder consultations because it feared opposition (due to bad experience in the past).

Company A was in favour of participation at all levels and Company B at none. Company C considered participation indispensable at the project level and useful at national and international level.

None of the companies had a special process to identify stakeholders. Company B identified them through their claims received, indicating the passive attitude of the company. Company A identified the stakeholder needs through dialogue (active attitude of the company). The usually rather proactive Company C did not identify

any concrete process for stakeholder involvement. Nevertheless, Company C gave a quite refined answer when the relevant stakeholders of the CDM project activity had to be identified. Company A was also able to name the main stakeholders of its project activity, while Company B provided a standard answer: the company as internal stakeholder<sup>138</sup> and the communities affected as external stakeholders. Finally, the project developers provided their perception of the current practice of stakeholder involvement in CDM project activities. Company B was not informed about the current practice. Company A explained that it was satisfied with the current practice of conducting first informal meetings with key stakeholders and finally a general stakeholder consultation. Company C pointed out that time was often too restricted to discuss sustainability in detail during the consultations. This indicated that Company C was aware of the complexity of the topic and the limits of participatory processes. Company C was also willing to intensify the discussion to integrate stakeholder interests better.

Variable	Case A	Case B	Case C
Stakeholder involvement	Unproblematic: to be transparent, sit together, credibility	Problematic: provoke more claims, opposition, act in favour of stakeholders without involving them, not willing to discuss SD, bad experience	Unproblematic: motivate stakeholders, provide knowledge, positive for implementation and SD
Participation at which level needed?	All	None	Indispensable at project level, useful at national and international level
Identification of stakeholders	No process, straightforward, stakeholders are known	No process, identified through their claims	No process
Identification of stakeholder needs	Dialogue	No process	No process
Internal stakeholders	4 shareholders	Company itself	Employees, main shareholder = the state
External stakeholders	Government, population (represented by mayor and local NGO)	Communities affected by project activity	Affected communities, miners, transport and fuel companies, concerned ministries, regional government, municipalities, 2 NGOs
Current procedure to involve stakeholders	Informal consultations plus official stakeholder consultation, happy with current practice	Nothing yet	Official stakeholder consultation, identify time as a restricting element to SD discussion during consultation, ready to intensify

**Table 19:** Stakeholder participation

### 1.2.8. Potential outcomes

Regarding potential reactions to positive or negative outcomes, all three companies had difficulties with providing answers. They considered strong negative impacts of their project activities very improbable. Company A and C would compensate negative impacts, Company B had no emergency plan. The strategy of

<sup>138</sup> This is a vague specification. It has to be clarified which groups are meant to involve them in the process.

Company A was risk exclusion. Company B would use positive result for its marketing. Company C provided a differentiated answer: in case of very positive impacts, the company would even enlarge their support using the knowledge gathered; in case of no impacts, the reasons would be analyzed and the efforts intensified.

Variable	Case A	Case B	Case C
Management of outcomes	Good business (compensate, risk exclusion)	No plan (publish good results)	Special effort (extent engagement, analyze, compensate)

**Table 20:** Potential outcomes

### 1.2.9. Typology

As an output of these initial interviews, the following typology of the project developers could be elaborated:

Variable	Case A	Case B	Case C
Compliant or proactive	Proactive	Compliant	Proactive
Aim	Perform and survive (fears benchmarks)	Comply and maintain position	Over-perform and become leader
Motivation	Sound management, personal involvement	Necessary requirement, expected by public	Sound management, market advantage
Focus	External (e.g. output for environment and community, stakeholder involvement)	Internal (e.g. goal achievement and feedback processes)	External (e.g. interested in ex-post evaluations)
Principle	Follows its own practical experience	Adheres to standards (such as ISO)	Follows broader discussion
Experience	Experience with CDM, practical experience with sustainability management	No experience, neither with the CDM nor with sustainability management, no clear concept of sustainable development	Some experience with sustainability management, no experience with the CDM

**Table 21:** Typology

This table reflects the impression gained from the initial interviews, but the way the project developers presented themselves does not necessarily have to match reality. Companies may have withheld information or exaggerated their engagement. It cannot be judged how much of the proactive attitude of Company C had already been implemented and how much of it was programmatic. Company A also adopted a proactive attitude, however different from the one of Company C. Company A followed the straightforward approach suiting a small, owner-managed company, while Company C pursued an approach geared to the interested public. Company B clearly stated that it did not have experience and rather feared the confrontation.

#### 1.2.9.1. Company A

The project developer adopted an attitude of a small enterprise managed by the company owner: His objective was to make sound investments which created benefits to the stakeholders and income to the company (*win-win* attitude). He

further wanted to gain experience in this new business field. For Company A, good contacts with the community and stakeholder involvement were especially important, but the owner had to have a veto right as he bore the business risk. He relied on his implicit understanding of sustainable development. Possibly because of concerns for survival of the company, the project developer opted for sustainable development criteria which should not be too restrictive and form minimal standards. This expressed the company's willingness to perform better than the baseline on the one hand, but also showed that the company, maybe because of its size, feared benchmarks which could become a market barrier on the other hand. Criteria were justified if they led to more benefits for the environment and the community, demonstrating the performance orientation of the project developer.

#### 1.2.9.2. Company B

Company B saw an opportunity in the CDM to address a long neglected topic: sustainable development. However, the company feared direct confrontation with stakeholders and binding criteria for sustainable development. Company B was aware of its knowledge gaps concerning the topic and felt uncomfortable with approaching sustainable development. In its disoriented position, the company relied on external standards.

#### 1.2.9.3. Company C

Company C was the one which was most informed on the sustainability debate. Most of the answers provided were differentiated. Company C recognized sustainability as a means to position itself on the market standing out against competitors. Therefore, it had an interest in ex-post evaluations and obligatory criteria in form of benchmarks. The company underlined the dissemination of information on sustainable development showing the interest in using the achievements for marketing. However, stakeholder analysis had not yet been institutionalized in the company.

## 2. The elements of the SMA

### 2.1. Policy analysis

#### 2.1.1. Enrichment and systematization

At first, the companies claimed that their project activities had impacts on some general high-level goals (such as growth for Company A, B and C or positive impact on the balance of payments for Company C). Later, however, these criteria were no more used for the pathway of sustainable development by the project developers, as it was too difficult to show the direct impact of the project activity. Nevertheless, most of the criteria selected in the policy analysis were maintained, although they were often reformulated (see Annexe 6). Overlapping issues were consolidated (e.g. participation, stakeholder involvement and empowerment, or rural development and regional development). Some aspects considered obvious were no more mentioned explicitly (such as use of renewable resources by Company B and C) in the later stages of the pathway of sustainable development.

#### 2.1.2. Applicability

As there was no set of sustainable development criteria available from the DNA to provide guidance and none of the three project developers was very much involved in the sustainability topic yet, the policy analysis had to be prepared by the

author of this case study, acting as facilitator, in cooperation with the project developers.

The facilitator had to provide a broad set of criteria from different sources to launch the discussion. During the selection of relevant criteria, the facilitator asked probing questions (e.g. “Why do you consider this criterion relevant?” and “How does your project activity contribute to this criterion?”) to ensure that the concepts of the project developer were made explicit and to prepare the project developer for reasoning, arguing and defending the sustainability strategy.

Variable	Case A	Case B	Case C
<b>Policy analysis</b>			
Content	Most of the points appeared again in the final pathway of change, although they were often reformulated. Growth, technological self-reliance and project replicability and organizational learning were dropped later.	Most of the points appeared again in the final pathway of change, although they were often reformulated. Use of renewable resources, Reduce economic burden of energy imports, Growth, Sector development, Technology transfer, Improve quality of life, Empowerment were dropped later.	Most of the points appeared again in the final pathway of change, although they were often reformulated. Use of renewable resources, Positive impact on the balance of payments, Growth, Improve quality of life, Increase energy access, Good governance, Improve service availability were dropped later.
Applicability	The policy analysis had to be prepared, as the project developer was not broadly informed about the relevant policies. Facilitator provided a broad list of SD criteria to launch the discussion, guided the project developer, asked probing questions when a criterion was chosen (Why? Could you explain?) to make the concepts of the project developer explicit and to prepare the project developer for arguing/defending its strategy.	The policy analysis had to be prepared, as the project developer was not broadly informed about the relevant policies. Facilitator provided a broad list of SD criteria to launch the discussion, guided the project developer, asked probing questions when a criterion was chosen (Why? Could you explain?) to make the concepts of the project developer explicit and to prepare the project developer for arguing/defending its strategy.	The policy analysis had to be prepared, as the project developer was not broadly informed about the relevant policies. Facilitator provided a broad list of SD criteria to launch the discussion, guided the project developer, asked probing questions when a criterion was chosen (Why? Could you explain?) to make the concepts of the project developer explicit and to prepare the project developer for arguing/defending its strategy.

**Table 22:** Policy analysis

## 2.2. Stakeholder analysis

### 2.2.1. Enrichment and systematization

During the first interview, the project developers mentioned the relevant stakeholders who came to their mind. During the stakeholder analysis, more groups could be identified and their needs were specified based on the experience of the project developers.

Company A initially identified the four shareholders, as well as the government, and the population (represented by mayor and local NGO) as stakeholders, but using the stakeholder analysis, the PRO side identified 19 stakeholders and CONTRA side 17. Company B had a very general definition of stakeholders at first – the company itself and the communities affected by the project activity – but recognized 19 stakeholders during the later analysis. Company C provided a more refined answer during the first interview, citing the employees, the state (the main stakeholder), affected communities, miners, transport and fuel companies, concerned ministries, regional government, municipalities, and two NGOs. In the later stakeholder analysis, 20 stakeholders were identified.

For each stakeholder, the expected needs were specified during the discussion. These would have to be verified during stakeholder dialogues and consultation.

### 2.2.2. Applicability

None of the companies so far used a systematic procedure to identify stakeholders and their needs. The stakeholder analysis was applicable, but the project developers had difficulties in identifying all relevant stakeholder groups. Before looking at the guiding questions, the broad nature of the term *stakeholder* was not clear to the project developers. To illustrate who could be stakeholders, an exemplary overview could be helpful in addition to the guiding questions.

With probing questions, the facilitator made the project developers think about the entire value chain and related activities, the clients, the affected population and the institutions involved.

Variable	Case A	Case B	Case C
<b>Stakeholder analysis</b>			
Content	Refined through the use of the SMA, much more stakeholders identified, needs specified	Refined through the use of the SMA, much more stakeholders identified, needs specified	Refined through the use of the SMA, much more stakeholders identified, needs specified
Applicability	Applicable, but difficulties in identifying all relevant stakeholder groups, definition of the term <i>stakeholder</i> not clear	Applicable, but difficulties in identifying all relevant stakeholder groups, definition of the term <i>stakeholder</i> not clear	Applicable, but difficulties in identifying all relevant stakeholder groups, definition of the term <i>stakeholder</i> not clear

**Table 22:** Stakeholder analysis

## 2.3. Definition of resources and inputs

### 2.3.1. Enrichment and systematization

In the case of Company A, the shares of CERs to be invested in the social plan had already been defined for each of the activities planned. Company B and C

followed CONAM's recommendation to invest around 30 to 40% of the CERs<sup>139</sup>. Still, resources and inputs were mainly understood in a financial way, but human resources, material, etc. should also be specified as they consist in non-financial inputs.

### 2.3.2. Applicability

The definition of resources and inputs is typically a core task for companies. The project developers were generally able to deal with this element, but understood it mainly in a financial way. Company A disposed of contracts with the community specifying financial resources, and further defined resources and inputs when developing indicators (element 6 of the SMA). By contrast, Company B and C found it difficult to define them right from the start as they were closely related to the details of the activities to be implemented. At a planning stage, the attribution of resources and inputs should be developed internally, but it can still change. It should only be published when the related activities have been sufficiently specified due to the accountability of the project developer.

The facilitator had to provide guidance on the nature of resources and input: Not only financial means were to be considered but also human resources, material, etc.

Variable	Case A	Case B	Case C
<b>Definition of resources and inputs</b>			
Content	In terms of CERs (budget), not difficult as already specified in the contract with the stakeholders (the community). In terms of engagement by the project developer, not clear at the start, could be clarified during discussion.	At this initial stage still difficult, followed the DNA recommendation to invest about 30-40% of the CERs. In terms of engagement by the project developer, not clear.	At this initial stage still difficult, followed the DNA recommendation to invest about 30-40% of the CERs. In terms of engagement by the project developer, not clear.
Applicability	Applicable. Some guidance needed as to resources and inputs can be more than financial means, e.g. time spent by somebody, qualitative input by somebody, manpower, etc. In the end, all these issues should be captured by specified budget.	Difficulties at this initial stage in anticipating the details of the activities planned. To be refined at later stage. At a planning stage, the attribution of resources and inputs should be developed internally, but it can still change. It should only be published when the related activities have been sufficiently specified due to the accountability of the project developer.	Difficulties at this initial stage in anticipating the details of the activities planned. To be refined at later stage. At a planning stage, the attribution of resources and inputs should be developed internally, but it can still change. It should only be published when the related activities have been sufficiently specified due to the accountability of the project developer.

**Table 24:** Definition of resources and inputs

<sup>139</sup> It has to be remembered that CONAM encourages project developers to invest a high share of the CERs, but that the reality is different and only about 2-3% of the CERs are invested in social plans.

## 2.4. Definition of a goal hierarchy

### 2.4.1. Enrichment and systematization

The need to clarify the relationship between the upper goals, the sub-goals and the project activity helped the project developers considerably in clarifying their ideas. The *if-then* constructions forced all three project developers to abstain from general statements, like the project activity contributes to the growth of the country. It further helped communicating the concept of sustainable development among the group members and probably could be helpful in the contact with the DNAs and stakeholders. The pictorial and synoptic presentation provided an overview which allowed structuring the concept of sustainable development. Interdependencies and conflicts could be illustrated. The project developers could also indicate where their influence ends and where external factors came into play. Accountability is a major issue for project management and evaluation. Accountability was reinforced by a clear definition of a goal hierarchy and the way the project activity was intended to contribute. At first, there was a tendency that project developers made out positive effects on many of the high-level criteria. However, they realized during the use of the SMA that they would be held accountable for the achievements and that they had to specify external influences which could alter the results to protect themselves from unreasonable claims. The project developers recognized that they could not clearly demonstrate their contribution to high-level goals, but to the sub-goals which are supposed to contribute to the achievement of the upper goals. Thus, clear accountabilities help prevent inflation of the benefits created by the project activity.

### 2.4.2. Applicability

During this searching process, the project developers needed guidance because they were initially not able to identify areas related to the topic of sustainable development and they did not think about influencing factors beyond their control. The comprehensive view helped to discover new areas of action (e.g. Case C) but also factors which could not be influenced by the project developer: This qualified the impact of the project activity. At an early project stage, this definition of the goal hierarchy helped clarifying priorities and designing the project activity (Case B and C), while at a later project stage (Case A), the strategy could be refined and gaps could be closed. The communication of the sustainability strategy was further improved. The pictorial presentation of the strategy was the only major drawback as it needed much space and especially designed on paper could become a challenge.

Variable	Case A	Case B	Case C
<b>Definition of the goal hierarchy</b>			
Content	Project developer tended to initially see a positive effect on many criteria, but when made accountable for the outcomes (which included measurability, being precise as essential), much was discarded. The pictorial representation helped structuring and discovering	Project developers tended to initially see a positive effect on many criteria, but when made accountable for the outcomes (which included measurability, being precise as essential), much was discarded  The pictorial representation helped	Project developers tended to initially see a positive effect on many criteria, but when made accountable for the outcomes (which included measurability, being precise as essential), much was discarded  The pictorial representation helped

	interdependencies, although the project was already in an advanced stage. Open contradictions were not identified (note: stakeholder consultation accomplished).	structuring.	structuring.
Applicability	Applicable at a later stage (operation). Helped to communicate the concept. Multi-goal planning needed space, the representation on paper was a challenge. At this point, the project developer needed guidance because he was initially not able to identify areas related to the topic or influencing factors.	Applicable at an early project stage (planning phase). Helped to structure and communicate the concept, as well as to select valuable activities to contribute to SD. Multi-goal planning needed space, the representation on paper was a challenge. At this point, the project developers needed guidance because they were initially not able to identify areas related to the topic or influencing factors.	Applicable at an early project stage (planning phase). Helped to structure and communicate the concept, as well as to select valuable activities to contribute to SD. Multi-goal planning needed space, the representation on paper was a challenge. At this point, the project developers needed guidance because they were initially not able to identify areas related to the topic or influencing factors.

**Table 25:** Definition of goal hierarchy

## 2.5. Definition of activities

### 2.5.1. Enrichment and systematization

All project developers had a strong tendency towards making donations, i.e. sponsoring activities. During the use of the SMA, the sense of the donations was questioned: In Case A, the project developer clarified that he contributed knowledge on good management and was actively involved in the investments. In Case B, it would still have to be analyzed whether the support for fish farms would contribute to the diversification of the regional economy (without negative side effects), and what input, besides financial support, the company would be able provide. In Case C, the idea of financing an adventure park was abandoned; instead, a sustainable regional development plan was drafted.

### 2.5.2. Applicability

Initially, the project developers had some difficulty in linking the activities to the goals, but after becoming familiar with the element, they were able to so. Nevertheless, the challenge was to define the activities in a way that the sustainability guidelines are respected.

The facilitator again had to ask probing questions when ideas emerged which violated some of the guidelines. This helped the project developers to discard disadvantageous proposals.

Variable	Case A	Case B	Case C
<b>Definition of activities</b>			
Content	Had to clarify that investments are not pure	Donating unused work material	Adventure park would be kind of a <i>donation</i> to the

	donations, but that there is a strategy behind it and the use of the money is monitored (managed by the company).	poses risks.	community, but lacking SD benefits.
Applicability	The challenge is to define activities in a way that the guidelines are respected.	The challenge is to define activities in a way that the guidelines are respected.	The challenge is to define activities in a way that the guidelines are respected.

**Table 26:** Definition of activities

## 2.6. Definition of indicators

### 2.6.1. Enrichment and systematization

Case A improved the indicators of its project activity, as those mentioned in the PDD were too general, but some of the new indicators could still be strengthened, especially regarding the target value and unclear timelines (see Annexe 4). This was just a starting point: As a next step, the indicators would have to be discussed with the stakeholders to be further enriched. For Case B and C, the definition of indicators was not possible to its full extent. First suggestions were formulated, but would have to be refined with the stakeholders when the sustainability strategy had been elaborated.

### 2.6.2. Applicability

The concept of SMART indicators was new to the project developers, but the characteristics were understandable in theory. In practice, project developers found it difficult, especially those in the planning phase, to define the indicators in a realistic way. The reason for this was that the activities to be implemented had been neither sufficiently specified nor discussed with the DNA and the stakeholders yet. The project developer of case A defined an extensive set of indicators, but the indicators did not correspond to all characteristics (SMART) needed (see Annexe 4).<sup>140</sup>

Variable	Case A	Case B	Case C
<b>Definition of SMART indicators</b>			
Content	SMART indicators were developed (had not been fully specified for the project activity, although contract on outcomes existed), but needed further improvement. Requires thorough planning.	Difficulties in setting SMART indicators, especially at this early project stage, first intents were made, but indicators had to be refined during the following project stages and in dialogue with the stakeholders.	Difficulties in setting SMART indicators, especially at this early project stage, first intents were made, but indicators had to be refined during the following project stages and in dialogue with the stakeholders.
Applicability	Probing questions helped. Difficulties in setting SMART indicators (see above).	Probing questions did not help much. Difficulties in setting SMART indicators.	Probing questions did not help much. Difficulties in setting SMART indicators.

<sup>140</sup> It is examined whether the project developer was able to find answers to the SMART characteristics. It is not the aim to judge upon the quality of the indicators developed. This has to be done during stakeholder consultation.

	Requires thorough planning.	tors (see above).	cators (see above).
--	-----------------------------	-------------------	---------------------

**Table 27:** Definition of indicators

## 2.7. Discussion of underlying assumptions

### 2.7.1. Enrichment and systematization

During the case studies, the discussion of underlying assumptions was applied by the project developers to scrutinize the sustainable development strategy. This tool had not been applied before by the project developers.

The discussion of underlying assumptions led in all three cases to a set of pivotal assumptions as well as the identification of potential strengths and weaknesses of the strategy. Even at later project stages, the analysis triggered new insights, discovered gaps in the strategy and provided systematization: In Case A, for example, the behaviour of the waste management company or the suppliers had been neglected.

### 2.7.2. Applicability

The discussion of underlying assumptions could be applied successfully in all three cases. Case A posed a special challenge as the company consisted of one person only; thus, group formation was not possible. In such a case, a company needs a consultant (who can be any competent person, i.e. knowledgeable about the project and sustainability issues) for questioning the underlying assumptions. This role was assumed by the facilitator. The participants in Case B had some difficulties in questioning their strategy as they were not used to adopting this perspective (explanation provided by the participants). In Case C, the PRO group found it difficult to attribute a low importance to an assumption and to make out assumptions of low certainty probably due to one or some of the following reasons:

- a) All assumptions were important and there was nearly no risk involved.
- b) Participants were not yet used to scrutinizing a strategy and to discussing underlying assumptions.
- c) Participants censured their ideas, discarding issues they considered unimportant or uncertain.

At that stage, the facilitator had to arrange the groups in such a way that people with similar positions formed one group. During the exercise, the facilitator guided the participants through the process without influencing the formulation of assumptions. Probing questions helped to formulate the behavioural assumptions: “What could damage the success of your strategy?” or the *inverse optimal question*, “What has to be assumed about each stakeholder so that these assumptions logically make your strategy optimal?”

Variable	Case A	Case B	Case C
<b>Discussion of underlying assumptions</b>			
Content	At a late project stage (operation), input from outside the company was needed. The discussion of underlying assumptions triggered new insights, discovered gaps, and provided systematization, but also potential	At a very early project stage (planning phase), it was important to obtain input from inside the company. The discussion of underlying assumptions triggered new in-	At a very early project stage (planning phase), it was important to obtain input from inside the company. The discussion of underlying assumptions triggered new insights, discovered gaps, and provided systematization, but also

	strengths; although no group discussion was possible (just two individuals).	sights, discovered gaps, and provided systematization, but also potential strengths.	potential strengths.
Applicability	In a one-man company, groups cannot be formed, i.e. such a <i>micro-company</i> needs at least one expert/consultant at this project stage to take the opposite role. For group dynamics to take place (which is also the intention of this step), even more experts would be needed. The more persons participate in the discussion, the richer the variety of perspectives.	Difficulties in assuming one of the positions (in this case criticizing their project) can emerge.	Difficulties in assuming one of the positions (in this case defending their project) can emerge.

**Table 28:** Discussion of underlying assumptions

## 2.8. Summary of results from implementation

The SMA enriched and systematized the strategies, either at a later project stage or at the very beginning. The SMA could be applied by the project developers themselves without the need of a consultant, but a facilitator experienced with group processes and knowledgeable about sustainable development and the SMA was needed.

Variable	Results
<b>Element 1 – Policy analysis</b>	
Content	Positive impact – provided orientation with relevance for the later strategy
Applicability	Limited applicability – guidance strongly needed, knowledge of relevant policies by the project developers cannot be taken for granted
<b>Element 2 – Stakeholder analysis</b>	
Content	Positive impact – refined, more stakeholders identified and needs specified
Applicability	Applicable – guidance on who to consider as <i>stakeholders</i> helpful
<b>Element 3 – Definition of resources and inputs</b>	
Content	Positive impact – but financial aspects (budget) were dominant, for other kinds of resources and inputs guidance needed Difficulties – at early project stage definitions had to be developed successively during project planning and stakeholder consultation
Applicability	Applicable – at later stages Limited applicability – at initial stages, indications stayed very general (only the budget was specified) as dependent on strategy being developed
<b>Element 4 – Definition of a goal hierarchy</b>	
Content	Positive impact – initial tendency to ‘safe the world’, pictorial character helpful to focus and to clarify concepts
Applicability	Applicable – facilitator recommendable to identify areas

	related to the project activity
<b>Element 5 – Definition of activities</b>	
Content	Positive impact – generation of ideas, understanding of sustainable development improved (e.g. <i>donations</i> should not be the first choice)
Applicability	Applicable – facilitator should provide orientation to make project developers follow the sustainability guidelines
<b>Element 6 – Definition of SMART indicators</b>	
Content	Positive impact – at later project stages Difficulties – at early project stage definitions had to be developed successively during project planning and stakeholder consultation
Applicability	Applicable – at later project stages Limited applicability – at earlier project stages In both cases: facilitator recommendable
<b>Element 7 – Discussion of underlying assumptions</b>	
Content	Positive impact – new insights generated, gaps discovered, proceeding more systematic
Applicability	Applicable – but facilitator needed to guide the group discussions Limited applicability – micro-companies would need external input to increase the variety of ideas
<b>Summary</b>	
Content	Each step had positive impacts on the sustainability strategy; however, project developers had difficulties with the element 3 and 6 at an early project stage
Applicability	Element 2, 4 and 5 were generally applicable. Limited applicability for element 1 (guidance from DNAs needed), element 3 and 6 (at early project stages) and element 7 (in one-man companies due to group processes)

**Table 29:** Summary of results of implementation

The analysis also showed a clear lack of basic knowledge on sustainable development among the project developers. This confirmed the need for sustainable development guidelines.

### 3. Following sustainable development guidelines

This section shows how the project developers followed the ten sustainability guidelines while applying the SMA.<sup>141</sup>

#### 3.1. Holistic perspective

##### 3.1.1. Interdisciplinary

For Case B and C, the approach was interdisciplinary at the project level, as managers from different areas participated. At Company A, this interdisciplinary approach could not be ensured during the case studies because the company consisted of one person only, but the project developer knew already the stakeholder's points of view from past consultations.

##### 3.1.2. Three dimensions

All three dimensions – economic, ecological and social – were taken into account and considered together in the three cases. But this did not mean that any project

<sup>141</sup> This section does not assess quality of the sustainable development strategy developed. It just analyzes the procedural impacts of the guidelines on the decisions taken by the project developers.

developer had to pursue all three dimensions equally on any project activity as priorities differed.

#### 3.1.2.1. Weighting of the goals

A company cannot be blamed for considering emission reductions as the primary goal and sustainable development as the secondary goal in the context of the CDM because this is the basic idea which makes the CDM work. Emission reductions are the source of additional income which often can be decisive for undertaking the entire project activity. A private company has first to survive on the market. Therefore, a minimal fulfilment of economic sustainability is the basis for any other activity. Nevertheless, a different classification can also have its legitimation. If sustainable development has been identified as one pivotal goal of the entire company, the CDM project activity and the related emission reductions may be one part of the whole strategy. In this case, the additional income from the CERs may still be a necessary condition for implementation. In all three cases, the economic dimension was slightly stronger than the other two dimensions.

#### 3.1.2.2. Trade-offs

This implies the consideration of possible trade-offs between the goals. For instance, all three companies wanted to achieve lower prices for electricity. However, this price reduction could engender a higher consumption. This phenomenon is known as *rebound effect*. Furthermore, investments to promote sustainable development and tourism can have the secondary effect of increased total emissions (due to a higher standard of living and the increase of activities), which would not have been generated without the development of the area. As long as higher power consumption is covered by electricity from zero-emission sources like hydropower, this effect does not create additional emissions. Sustainable development should also address possible rebound effects. At this point, it can be noticed that the two CDM goals can come in conflict easily and the developmental benefits have to be weighted against emission reductions. On the one hand, development is the priority of the host country; on the other, development might increase emissions.

Another trade-off existed between local development and the protection of natural and cultural heritage (Case C). The idea to reactivate unused ferryboats to create employment and prevent the tourists from staying in the old part of the town could generate GHG emissions by the operation of the ferryboats and thus have ecological impacts. Therefore, the sustainability strategy should be discussed and improved with the respective stakeholders (e.g. the Environmental NGOs (ENGOS)). To consider the trade-offs quantitatively, the SMA could be extended to include functions and weightings. Yet, apart from the fact that most CDM project developers might lack resources and knowledge for developing this extended model, it is an illusion to believe in an objective optimization of sustainability aspects of a project activity. Incomparabilities and incommensurabilities in a multi-stakeholder scenario complicate this calculation.

#### 3.1.2.3. Distribution of benefits

Due to the many trade-offs and multiple interests, optimization cannot be achieved when dealing with sustainability; only satisficing is possible. This implies that competing interests have to be taken into account and to be weighted against each other. These trade-offs can provoke decision difficulties. The stakeholder dialogues have to be used to establish an agreement between the parties. As

this process can require time and effort, experts (e.g. social scientists) should be involved as coaches to channel the discussion and negotiation at these stages. Most developing countries suffer from strong inequities. Although it is legitimate for a CDM project developer to pick the *low-hanging fruits* first, this does not signify that impacts on equity can be neglected. In the sustainable development strategy, the project developer has at least to avoid increasing an existing disequilibrium.

In Case C, the development of the capital of *Department B* could increase the development gap between the town and the surrounding villages and settlements in need of development. Thus, the development strategy of the capital of *Department B* should not be focused on the town but on the whole area, including the villages of the region in the programme of sustainable tourism.

Company B found itself in a conflict between two communities. A benefit to one of the communities was a loss for the other due to their competition for tourists. It was important to negotiate with both parties and to establish a joint development strategy. Company C faced a similar situation with regard to their strategy of promoting sustainable tourism. Company A had already passed this phase: an understanding between the stakeholders had been established through dialogue.

### 3.2. Embeddedness and institutionalization

This aspect was especially reflected in Case B and C. Both project developers formulated activities to integrate the consideration of sustainable development in the organizational structure of the company and the management system in place. Elements of the SMA can be used company-wide. Systematic analysis of stakeholder needs and participative elements are preconditions (or sub-goals). It is recommendable to try to integrate the CDM goals into existing management tools of the company. For instance, if the BSC was used (Company B and C), the implementation of a SBSC should be considered (Bieker and Dyllick, 2006, 95). For Company A, this consideration is not relevant as the company consists of only one person and one project activity, i.e. institutionalization is not a topic.

All three project developers initially had a strong tendency towards making donations, i.e. simply sponsoring activities. However, donations have the lowest impact on corporate policy (Thielemann, 2004, 7). They consist in financial or material contributions and do not require a high involvement of the project developer. They are often offered on an ad hoc basis, i.e. not embedded in a sustainability strategy (e.g. the lending of machines by Company B with its uncontrollable consequences). Further, donations can only have an impact on sustainability if they are used sustainably. The project developers cannot influence the outcome if their involvement is limited. In the context of the CDM, especially in Peru, where social investments are strongly recommended by the DNA, donations may be understood as pure compliance strategy and, in the worst case, as buying a clear conscience.

### 3.3. Scales

The scales to consider were essential for detecting gaps. The initial scope was in all cases too narrow and had to be extended. At the beginning, lower and upper elements of the value chain had not been considered by Company A and B.

Choosing local suppliers (Company A), for instance, can indeed be a contribution to local development, but if the respective suppliers manage their companies unsustainably, it does not contribute to sustainable development.

Furthermore, solid residues collected by Company A (also planned for Company B) was handed over to a subcontractor. Here, another weak point of the current

strategy could be identified. The project developer had only received a verbal declaration by the subcontractor that he would not incinerate the waste. This was a very general commitment and no monitoring took place. At this point, the design could easily be improved by a contract specifying how the waste was to be treated and by monitoring. Waste could even be avoided; yet, this would require investment in education which possibly could not be afforded by a small project activity managed by a micro-enterprise. Another example is the reforestation of slopes (Company B). Without adequate fire protection and prevention, no long-term improvements would be achieved.

The spatial scale to be considered centred primarily around the project sites, but the concrete project activities could also create far-reaching impulses for organizational company development and influence CDM practices in the country as well as in single cases possibly worldwide.

### 3.4. Participation

Participation is a double-edged sword for companies: On the one hand, participation needs time and resources, is not always easy to implement due to the different information level of the stakeholders and can even create discontent and excessive claims if not adequately implemented. Therefore, it may be perceived as a risk by a company. On the other hand, participation has some important advantages for companies and stakeholders. A multi-stakeholder agreement provides legitimacy to the activities of the company, is a way of confidence building, helps designing better project activities with strong acceptance among the stakeholders and it makes companies understand better the circumstance under which they operate. In addition, all actors are accountable for the result. The responsibility is shared, although it is differentiated. Furthermore, information sharing with stakeholders and joint development of sustainability strategies enhance the exchange of ideas and can create a common understanding of sustainable development. If participative processes are institutionalized, social networks can be created, which increases social capital.

However, project developers or strong stakeholders can exercise pressure upon weak stakeholders offering them just a *take it or leave it* option, such as to agree to the project design as it is or no investment will be made at all. It is a difficult task to evaluate whether all stakeholders have been involved, whether all objections and suggestions have been heard and how far these have been integrated into the decision-making. This is why the PDD should provide transparent documentation of this process. The ex-post monitoring of the DNA could also help to discover abuses, although it is no guarantee.

The CDM project cycle already contains participative elements in form of an obligatory stakeholder consultation. In Case A, however, the concepts had not been made sufficiently explicit, although the project developer backed the participatory approach. It could therefore not be shown right away whether the activities were coherent with the stakeholders needs. Company C supported the participatory approach and was willing to collaborate with stakeholder groups to implement the sustainability strategy. Company B initially feared the confrontation with the stakeholders but through the cooperation with NGOs, the position of the company could be strengthened and credibility could be enhanced. This would help the company in dealing with the deceived stakeholders. To improve the situation at Company B, it was analyzed why the outcomes of former contacts with stakeholders were not satisfactory: First, there was no dialogue established, but claims were passively received. Second, promises were made by Company B in the past which were not fulfilled and harmed the company image. Third, the activities un-

dertaken by the company to support the stakeholders were selective and ad hoc, i.e. lacking a systematic approach. All in all, this attitude led to the situation that the company found itself in the midst of a quarrel between two communities merely because of having offered their tractors free of charge to the public, not anticipating that the arbitrary use of the tractors by some stakeholders might affect the interests of others. As a consequence, the company perceived stakeholders' claims as threatening, experiencing that stakeholders had their way even by force (seizing the tractors owned by Company B). This situation was highly conflict-ridden. Here, the CDM offers an opportunity to overcome this conflict by providing an institutional frame for social consensus. However, as the company proved that it had so far not disposed of the capacity to deal with these processes, external consultancy might be recommendable in this situation. The sustainability strategy should be based on an agreement between the company and the stakeholders (not only with single stakeholders). The company could gain credibility by voluntarily committing to a social agenda, and its fulfilment could be monitored by a DOE. Alliances with key stakeholders would prevent the company from finding itself again in an isolated situation. Key stakeholders could also be explicitly asked to act as consultants to the project activity rather than stakeholders advancing their claims. To demonstrate that stakeholder needs were taken into account, the project developer could sign agreements with the stakeholders. Strong stakeholders, however, could stop or delay a project activity. The project developers could protect themselves by offering a certain budget, referring to the requirements of the CDM regarding sustainable development, and making the process transparent.

### 3.5. Transparency

#### 3.5.1. Underlying theory

The underlying theory had not been discussed by any of the project developers before the case studies took place. Ad hoc actions and responding to stakeholder claims were current practice. Company A is a one-man-company and the CEO based his decisions on his implicit understanding of sustainable development without questioning it. Company B did not have a clear concept of sustainable development, as the topic had not been considered in the past. Nevertheless, it was recognized as urgent, but the expertise to approach sustainability was missing. This put the company in an unpleasant situation. The need to discuss underlying theory was new to the company. Company C had recently started considering sustainability, but lacked background knowledge to identify the unsustainable elements of a strategy. Therefore, the discussion of underlying assumptions was also a new experience for this project developer. The example of the adventure park illustrated that an analysis of stakeholder needs and local social and environmental conditions had not yet been part of the decision-making process.

#### 3.5.2. Accountability

There was a tendency that project developers initially saw a positive effect on many criteria. It was therefore important for them to know that they would have to prove this impact, and that they would be made accountable for the results. If they were not fully accountable, they had to specify which influencing factors could alter the results to protect themselves against illegitimate reproaches and claims. Therefore, it was important for the project developer not to inflate the impacts of the activities undertaken to contribute to sustainable development. For instance, in the case of the Company A project activity, initially, the project developer talked about *cleaning* the river, but had to recognize that he could not assume the respon-

sibility for the chemical and bacterial composition. To be only accountable for those aspects under his direct influence, the project developer has to specify its responsibility accurately. Company B experienced the negative situation of being made accountable for impacts beyond the company's control, namely the use of the tractors lent to individuals. Such a situation had to be prevented. It had to be identified ex ante where Company B could have an influence so that it was not made responsible for issues beyond its control in the end. Therefore, the company had to declare clearly where its influence ended. If the results were dependent on the behaviour of others, the company had to do everything in its power to make them behave opportunely. This could be achieved through agreements, contracts and monitoring. Company C initially thought about erecting an adventure park financed by the CERs. But when the project developer realized that this might not be in line with the sustainable development of the city and that the impacts would be associated with the project developer although being only the sponsor, this activity was discarded.

### 3.6. Operationalization

The first step of operationalization consisted in translating the concepts into goals and sub-goals as well as to link them to activities which should be undertaken to fulfil the goals. When operationalization reached the indicator level, the sustainability strategy had to have been defined. Therefore, this element was mainly applicable to Case A. Before the use of the SMA, the indicators in the SDMP were very vague and unspecific. After the use of the SMA, the indicators provided information to

- a) Understand the activities,
- b) To follow-up their implementation,
- c) Monitor the achievement of targets.

The other two cases were still in an early stage, and only some initial indicators had been formulated which were likely to change during the refinement of the strategy.

For example, employment generation as an element of sustainable development which can be found in almost all catalogues of sustainable development criteria. In addition, rural development, or decentralized development, is one of the main goals in Peru. The big cities, above all Lima, suffer more and more from overpopulation with a vast amount of people coming from all parts of the country in search for work (see Chapter IV). Due to the fact that the employment opportunities are very limited for unskilled people, social problems are inevitable. The country is therefore in urgent need of creating professional perspectives especially for young people outside the conurbations to fight the rural exodus. For instance, Company A employed people who had formerly been employed in the agro-industry. They benefited from improved working conditions. According to the project developer, some of the employees had a technical background, but had never had the opportunity to work in their field. Their employment with Company A provided them with this opportunity; thus, they could better identify with their new work. However, the monitoring plan in the PDDs of Case A was not specific enough to demonstrate the project activity's contribution. The PDDs only stated that the number of jobs created had to be positive, which was too general. In the extreme case, employing a security person, possibly not even full-time, would fulfil the target.

If a project activity really created jobs, the kind of improvement achieved and its net result will have to be verifiable. For employment generation, the monitoring plan should include details of, for instance:

- a) How many locals have been employed,
- b) How many of them are young people (or indigenous or women, depending on the sustainability goals to be achieved),
- c) Whether their working conditions have been improved, not exclusively referring to wages,
- d) How many employees had been unemployed, sub-employed or employed full-time before, but on lower wages; if employed before, it should be examined what happened with this job, whether it was taken by another person or cut back,
- e) Where the jobs have been created,
- f) Whether jobs are cut back somewhere else due to the project activity<sup>142</sup>.

### 3.7. Continuity

The elements of the SMA can be used at different project stages: At the beginning, the selection of goals which could be influenced is most relevant (Case B and C), while this has already been decided for project activities being implemented (Case A). In these cases, it is crucial that the outcomes are measurable to make sure that the project activity is on track and to communicate the achievements. As conditions may change, the elements can be used to refine the project design and management. Within this PhD thesis, however, this could not be observed as the case studies consisted in a snapshot.

### 3.8. Organizational learning

Whether organizational change can take place is highly dependent on the upper management and corporate culture. Corporate culture comprises norms and values of the workers, employees as well as managers and provides information regarding the spirit of the company. It comprises past experiences and implicitly defines rules which steer the behaviour of the company members and set the frame for matching strategies and structures. The perception of sustainability and the way to deal with it are strongly characterized by the corporate culture. Corporate culture cannot be changed easily and especially not quickly. Learning processes can be supported through techniques (e.g. internal auditing) and should be institutionalized in the long run (e.g. in form of *rites*, incentives and rules). (Bieker and Dylllick, 2006, 96f.)

The SMA can promote organizational learning with regard to sustainable development as it introduces procedures for how to make concepts and underlying theory explicit. Participatory elements facilitate an exchange of ideas and a consensus. This process helps shaping the usually intangible definition of sustainable development at project level. Knowledge is created with regard to company's priorities, the needs of the stakeholders, as well as how to cope with stakeholders, build consensus and prevent conflicts in future. Elements of the SMA can also be used for other business processes. Organizational learning can be promoted by embedding the sustainability discussion into the strategic management and opera-

---

<sup>142</sup> Example: "Consider energy insulation schemes. They create jobs for people in the building and related industries. But what happens to the jobs that depend on the expenditure diverted by the insulation schemes? They may decline in numbers more than the insulation scheme jobs increase: it is a matter of empirical investigation." (Pearce and Markandya, 1989, 10)

tive processes of a company (Company B and C). For a one-man company (Case A), organizational learning equals individual learning.

### 3.9. Proactive attitude

There is a decisive difference between passively fulfilling stakeholders' claims (compliance strategy) and developing a sustainability strategy in dialogue with the stakeholders (proactive behaviour). If the project developer merely reacts to the stakeholders' requests, he follows again a compliance strategy and cannot use the benefits which can accrue from sustainability management. As the SMA is first applied inside the companies, it helps sharpening the view of the project developer and developing its own strategy. In Case A and especially in Case C, the project developers were willing to adopt a proactive attitude. Company B looked back on a history of a partially unsuccessful compliance strategy (at first considering the sustainability debate rather as a threat than as an opportunity). Being in a process of restructuring, the company considered adopting a new attitude towards sustainable development. Thus, the systematic development of a sustainability strategy was a major step for Company B away from its purely reactive behaviour.

### 3.10. Compensation

Sustainable development requires the compensation of negative impacts, but in any case, compensation is only a second-best option. The DNA should decide under which conditions a project developer has to do so and what compensations should look like. As it has been demonstrated above, trade-offs occur and should not be ignored. Company A and C declared themselves ready to compensate any negative impacts of the project activity although they considered this scenario very improbable. Nevertheless, in Case C, the construction of the transmission line might affect the natural reserve although it passes along a street to minimize negative impacts. Company B had no emergency plan yet and would have to address this topic. In the past, this had been a weak point of its management (e.g. the negative impacts of lending tractors had not been addressed).

Three ex-ante constellations are possible:

- a) Negative impacts are too strong and the project activity cannot be executed.
- b) Negative impacts are negligible or can be adequately compensated.
- c) No negative impacts occur and the project activity can be undertaken.

Ex-post compensation may be necessary if targets could not be reached. Taking into account the holistic character of sustainable development and the limited substitutability, the following hierarchy should be observed if targets are not met:

- a) Troubleshoot to still reach the target.
- b) If this is not possible, compensate the same criterion with other activity.
- c) If this is not possible, compensate in the same dimension.
- d) If this is not possible, compensate in another dimension.

The fourth alternative is the least attractive due to limited substitutability, and should therefore be avoided.

Variable	Case A	Case B	Case C
Holistic perspective	3 dimensions considered, no attempts made to reduce the impacts to a single number	3 dimensions considered, no attempts made to reduce the impacts to a single number	3 dimensions considered, no attempts made to reduce the impacts to a single number

Embeddedness and institutionalization	Not applicable as it is a one-man company	Not yet implemented, but recognized that changes are needed	Matter of the boss, want to create a special team
Scales	Perception sharpened for the entire value chain through the use of the SMA	Perception sharpened for the entire value chain through the use of the SMA	Perception sharpened for the entire value chain through the use of the SMA, new areas of interest discovered (such as tourism)
Participation	Very positive towards participation and stakeholder involvement even before using the SMA	Starting to recognize the need for participation and stakeholder involvement through the use of the SMA	Positive towards participation and stakeholder involvement even before using the SMA
Transparency	Transparency of presentation of the concepts and the planned activities considerably enhanced	Considerably enhanced, the company recognized that it will be accountable	Considerably enhanced, company recognized that it will be accountable
Operationalization	SMART indicators for the planned activities were defined, but should to be further strengthened	Difficulties in precisely defining SMART indicators for the planned activities	Difficulties in precisely defining SMART indicators for the planned activities
Continuity	Commented that he would be willing to use the approach for further project activities	Commented that they would be willing to use the approach for further project activities	Commented that they would be willing to use the approach for further project activities and that they were interested in using the SMA together with stakeholders
Organizational learning	Difficult to judge as it is a micro-company	Starting to recognize the need for organizational learning (sustainability management is expected, but the company is lacking expertise in this field)	Included in the pathway of sustainable development
Proactive attitude	Since the start	Changing, because recognizing the drawbacks of inaction, cannot shape the conditions if they stay passive	Since the start
Compensation	Compensation for any negative impacts of the project activity (but negative impacts are not likely to be manifested in the opin-	To be addressed: no emergency plan developed so far (in the past, no compensation for negative impacts of the lending of tractors,	Compensation for any negative impacts of the project activity is envisaged (but negative impacts not likely in the

	ion of the project developer)	for instance)	opinion of the project developer) → check potential environmental impacts of the transmission line
--	-------------------------------	---------------	---

**Table 30:** Following the SD guidelines

## 4. Summary

Each step of the SMA added valuable information on the content of the sustainability strategy. Element 1, the policy analysis, provided guidance on the elaboration of a sustainability strategy. Element 2, the stakeholder analysis, led to refined stakeholder groups and specification of their needs. Element 3, the definition of resources and inputs, provided more insight with emphasis on financial aspects. Element 4, the definition of a goal hierarchy, helped project developers to focus and clarify their concepts. Element 5, the definition of activities, led to a generation of ideas and an improved understanding of sustainable development. Element 6, the definition of SMART indicators, could be carried out when the sustainability strategy had been fully developed (i.e. at later project stages). Element 7, the discussion of underlying assumptions, generated new insights, discovered gaps and helped project developers to proceed more systematically. However, project developers at an early project stage had difficulties with element 3, the definition of resources and inputs, and element 6, the definition of SMART indicators, as these two steps require a detailed idea of what the project activity will comprise.

The applicability varied from step to step: Element 2, the stakeholder analysis, element 4, the definition of the goals hierarchy, and element 5, the definition of activities, were generally applicable. Limited applicability was detected for element 1, the policy analysis, as it was challenging for those not yet much involved in the sustainable development discussion. Thus, guidance on relevant sustainable development criteria from the DNA is needed. Furthermore, limited applicability was demonstrated for project activities at early stages for element 3, the definition of resources and inputs, and element 6, the definition of SMART indicators, for the same reasons as stated above. They should be used at later project stages. Element 7, the discussion of underlying assumptions, was only restrictedly applicable in the one-man company due to the need for a variety of ideas. In micro-enterprises consisting of one or very few people, the diversity of ideas is limited, which prevents the full application of the discursive elements. In such cases, external persons have to be involved to make the SMA applicable.

Finally, the results of the case studies were cross-checked with the sustainable development guidelines. The project developers tried to follow a holistic perspective by explicitly considering all three dimensions of sustainable development. They did not try to reduce their achievements to a single figure. Embeddedness and institutionalization could not be demonstrated for Company A as it was a one-man company, but Company B recognized that changes inside the company were needed, and Company C even stated that sustainable development was a matter of the boss and that they were willing to create a special team for this purpose. Different scales were reflected as the perception for impacts along the entire value chain was sharpened. Company C even discovered new areas of interest (sustainable tourism). Participation was already emphasized in Company A and C. Company B also started to recognize the need for participation and stakeholder involvement. Transparency of the strategies could be considerably enhanced in all three cases because the project developers define a sustainability strategy with specified goals, activities and indicators. The illustrations developed during the

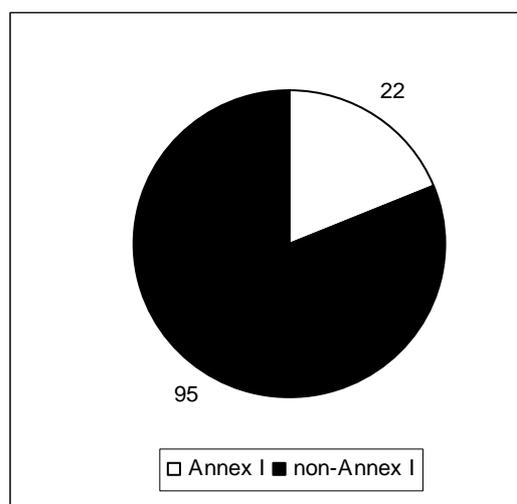
case studies show in detail to which goals the project activity should contribute, what should be implemented to achieve these positive impacts and – in the cases indicators could already be determined – how the fulfilment should be monitored. The accountabilities were clarified: as some aspects are not under the influence of the project developers, they cannot be made responsible for the respective outcome. Other aspects are influenced by external factors, which can affect the goal achievement. This increase in transparency supports a substantiated discussion on sustainable development. Operationalization through SMART indicators could be improved for Case A, but should be further strengthened in dialogue with stakeholders. Company B and C understood the concepts, but had difficulties with putting it into practice due to the early project phase (indicators would have been hypothetical at that stage). Continuity manifested itself in the express intention of all three project developers to use the SMA in future. Company C even stated that they would like to use the SMA together with stakeholders. Organizational learning did not apply to the conditions of a one-man company, but Company B and C recognized the need. Company C even included it as a goal in their sustainability strategy. A proactive attitude could be observed for Case A and C, but also Company B started recognizing the drawbacks of inaction. All three companies declared themselves ready to compensate any negative impacts of their project activity. The actual achievement of these sustainable development guidelines should be judged when the project activities would be evaluated (during validation and verification).

The analysis of the three individual cases in Peru indicated that the approach could be used by project developers. However, a facilitator was needed to guide the discussion of underlying assumption. In addition, project developers would have an easier start if they disposed of DNA guidance for the policy analysis. As a next step, the perception of the DNAs was studied in a worldwide survey. The following chapter summarizes the survey results.

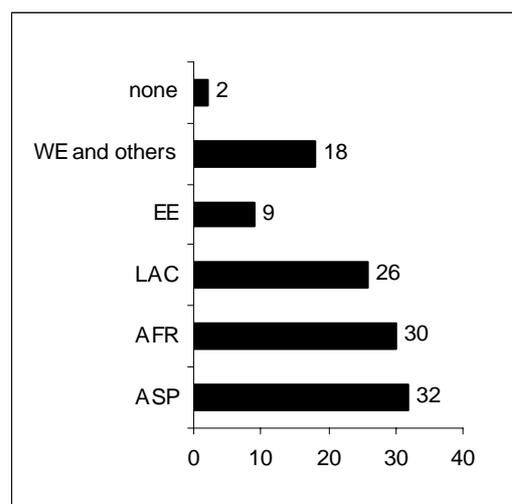
## Chapter VII – Survey

### 1. Survey data

On 11 January 2007, 117 DNAs had been notified to the UNFCCC. Their contact details were available on the UNFCCC website. 95 of the DNAs belonged to non-Annex I countries and 22 to Annex I countries. According to the UNFCCC classification, 32 of the DNAs belonged to Asian states (ASP), 30 to African states (AFR), 26 to Latin American and Caribbean states (LAC), 9 to Eastern European states (EE), 18 to Western European and other states (WE and others), and 2 did not belong to any regional group (none). The full list of the DNAs is included in the Annex (Annex 8.1, table 1).



**Figure 22:** DNAs notified to the UNFCCC on 11 January 2007

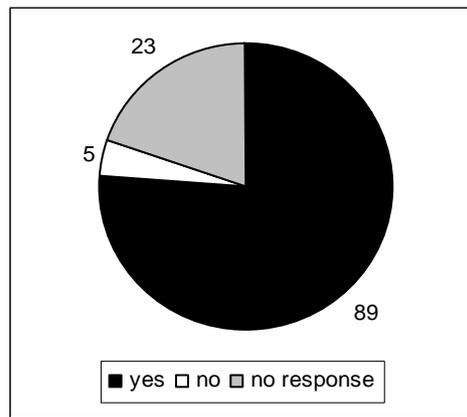


**Figure 23:** Regions of the DNAs notified to the UNFCCC on 11 January 2007

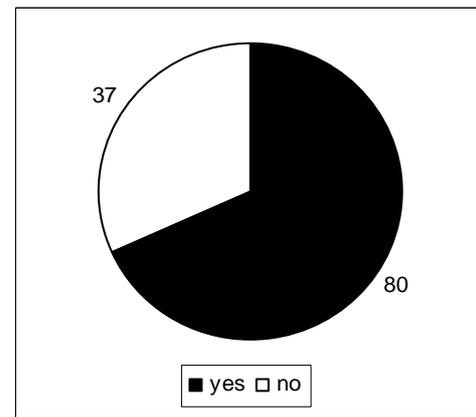
Out of 89 DNAs who expressed their interest in taking part in the survey, 80 finally participated. 5 DNAs refused to participate, 4 of them because they did not have time due to too much workload and 1 because the topic was not relevant for it. 23 DNAs did not provide a definite response.

Response	No. of DNAs	% of total 117 DNAs
Interest in taking part	89	76%
<i>Participation</i>	80	68%
Refusal	5	5%
No definite response	23	19%

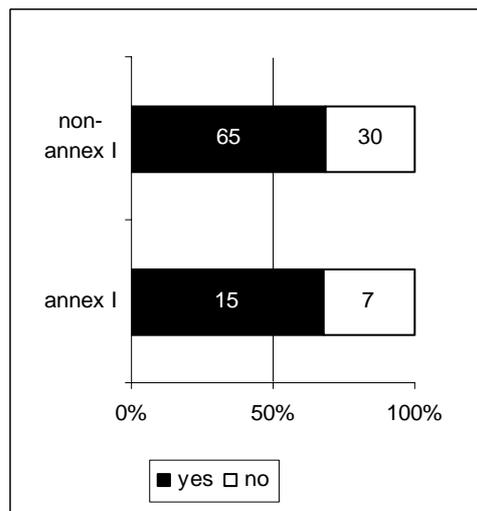
**Table 31:** Responses of the DNAs



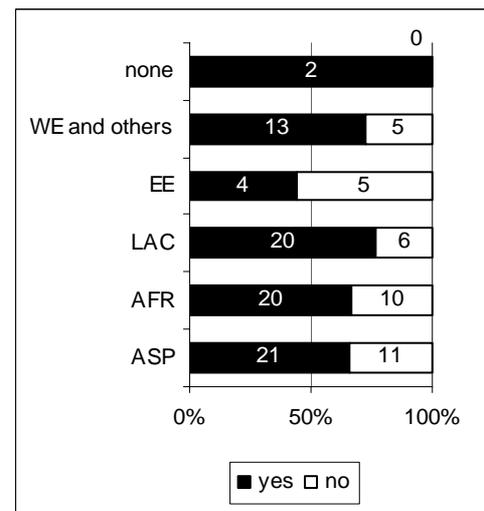
**Figure 24:** Number of DNAs expressing their interest in taking part in the survey



**Figure 25:** Number of DNAs who finally participated in the survey



**Figure 26:** Participation of Annex I and non-Annex I DNAs in the survey



**Figure 27:** Participation of DNAs in the survey along regional groups

The participation among Annex I and non-Annex I countries was 82% in both cases, which is why bias towards either group can be excluded. However, along the regional groups, the distribution is not so even. Eastern European states are underrepresented while Latin American and Caribbean states, Western European countries and others as well as the group not associated with any region are overrepresented. Still, the bias of the two extreme cases is not very important because the respective groups are very small: Eastern European countries count only 9 units and only 2 countries do not belong to any region. Nevertheless, for the sake of scientific accuracy, it has to be examined whether the responses of the regional groups differ and whether there might be a bias in total survey results. The following table shows the absolute and relative participation in the survey.

Group of countries	Universe (total no.)	Participation (no.)	% of universe
Annex I	22	15	68%
non-Annex I	95	65	68%
ASP	32	21	66%
AFR	30	20	67%
LAC	26	20	77%
EE	9	4	44%
WE and others	18	13	72%
none	2	2	100%

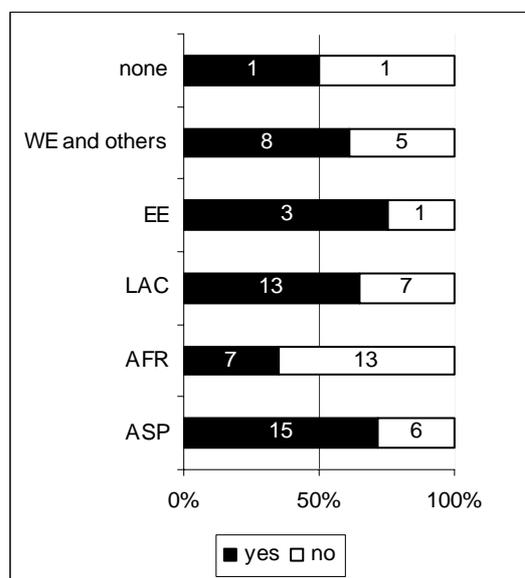
**Table 32:** Participation of the DNAs

## 2. Analysis

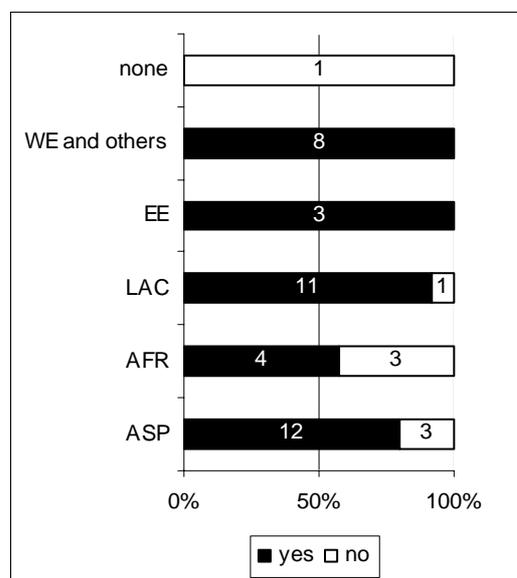
For the DNA survey questions, please refer to Annexe 7.1.

### 2.1. Availability of information

The availability of information was analyzed first to know whether additional information would be available to verify the interview data, if needed. Second, disposing of a website or using other means for the provision of information is an indicator for the state of development and the activity of the DNA.



**Figure 28:** Number of DNAs disposing of a website



**Figure 29:** Number of DNAs providing all the important information via the website

Regarding the introduction of websites, African States are still lagging behind. The majority of the DNAs dispose of a website. However, out of the 47 DNA websites, 8 of the sites do not provide all relevant information (Figure 28 and 29).<sup>143</sup> The initial results (Annex 8.1, table 2 and 3) suggested that those DNAs disposing of a website provide all the important information online and that those not disposing of a website do not (with two participants not responding). However, this was a misleading impression (Annex 8.1, table 4). The interviewees further specified their answers: Out of the participants who stated that there was a website available, 9 clarified that it was not the website of the DNA and 1 that it was not a website on the CDM. The same applies to the participants who had stated that there was no website available, 6 clarified that there was another website available to disseminate the DNA's information and 3 specified that there was none on the CDM. This entire picture might have changed soon after the study as 17 of the participants who said that the DNA did not dispose of a website explained that the website was under construction. But also 3 of the interviewees who stated that their DNA already disposed of a website had to admit that the site was still under construction. Some DNAs stated why they did not yet have a website. The reasons for not disposing of a website ranged from lack in finances, human resources and capacity, to managerial reasons and the simple fact that the DNA had started to operate only recently. For example, the African States usually did not give only one but several reasons: The greatest barriers for them were financial restrictions followed by a lack in human resources and capacity. Further-

<sup>143</sup> One DNA did not provide information on this aspect.

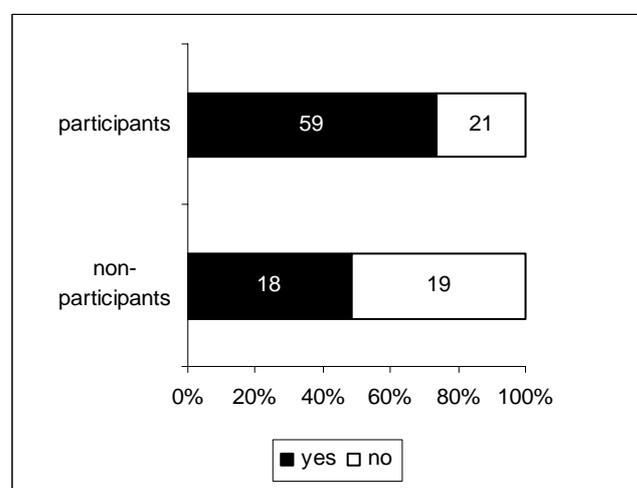
more, three of the African DNAs had only recently started to operate and for reasons of resources had not created a website yet (Annex 8.1, table 5).

To sum up, availability of information is still scarce, especially in the case of African DNAs. But also DNAs belonging to the group of Western European and other countries do not yet make sufficient use of the internet to inform project developers and the interested public.

## 2.2. Experience with the CDM

About three quarters of the DNAs interviewed had already experience with the CDM. Regarding the DNAs which did not participate in the survey, the estimated distribution regarding their experience with the CDM is about 50/50<sup>144</sup>. This shows that the DNAs with experience had a tendency to participate while those without experience tended not to take part in the survey.

The distribution of the project activities among the DNAs is very uneven: Three DNAs have approved over 60% of the CDM project activities of all the DNAs interviewed, while 31 DNAs have not approved any CDM project activity so far.

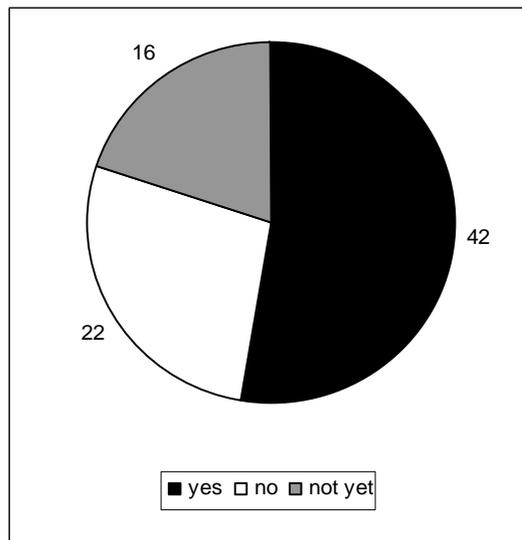


**Figure 30:** Comparison of the CDM experience of the DNAs who participated in the survey and those who did not participate

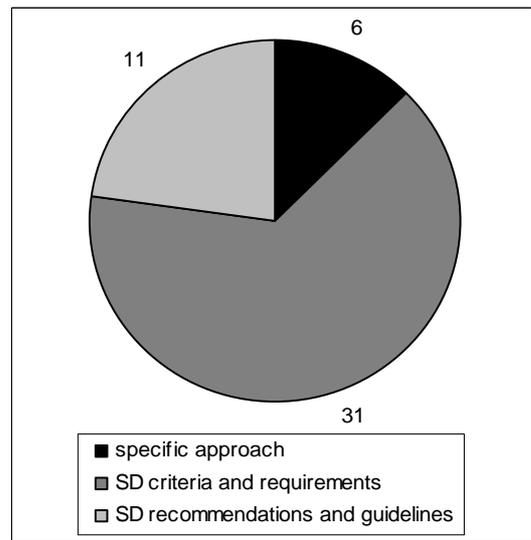
## 2.3. Current practice

More than half of the interviewed DNAs claimed that they have been using a specific approach to evaluate their CDM project activities under sustainability aspects. The other half of the DNAs have not had any procedure implemented, but about 14% of them clarified that they have the intention to do so.

<sup>144</sup> Based on April 2007 data from the Risø Institute: The CDM pipeline compiled by the Risø Institute does not provide the number of project activities approved by the DNA, but the number of projects at the validation stage requesting registration and having been registered. These numbers are taken as a proxy for the experience of the DNAs.



**Figure 31:** Number of DNAs stating that they used an approach to evaluate the contribution to sustainable development of CDM proposals



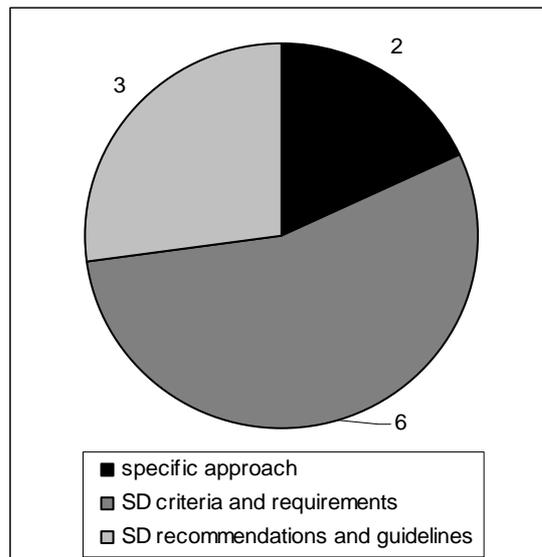
**Figure 32:** Types of approaches used (answers per category) as stated by the interviewees

To classify the approaches used by the DNAs so far, three options were presented to the interviewees:

1. Specific approach going beyond option 2 and 3
2. SD criteria and requirements
3. SD recommendations and guidelines

The majority of the DNAs said they had evaluated CDM project activities according to sustainable development criteria and requirements. The second-largest group had used sustainable recommendations and guidelines. And a small number of DNAs had chosen a *specific approach*, different from the other two options, standing for e.g. a special procedure or an analytic tool. Some DNAs stated that they had combined two approaches: 2 DNAs had chosen specific criteria and requirements in combination with recommendations and guidelines. 2 other DNAs had chosen the specific approach in combination with criteria and requirements. Figure 32 displays the number of answers per option.

Among the DNAs not using any specific approach so far, some declared their interest in one of the options: One DNA was interested in criteria and requirements, and another one in recommendations and guidelines. Among the DNAs not yet disposing of procedures, 6 were interested in criteria and requirements, 3 in recommendations and guidelines and 2 in a more ambitious specific approach. 2 of them disposed of fully developed approaches which still had to be approved (Figure 33).



**Figure 33:** Interest in a type of approach by DNAs not yet disposing of procedures (number of answers)

This picture looks very promising. To better understand what the approaches used looked like, the interviewees were asked to elaborate:

Three DNAs had chosen the following specific approaches:

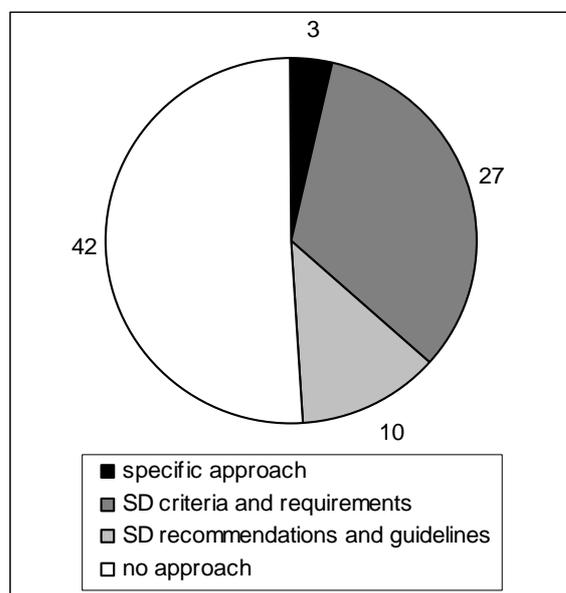
1. One DNA had used a questionnaire to be filled in by the project developers. This practice could consist in a purely verbal exercise or in an ambitious assessment, depending on the implementation. As the provision of answers to the questionnaire is mandatory, this would rather classify as the second option.
2. Another DNA had used a checklist plus an in-depth evaluation of the project activity, without giving any further details. Based on the information provided by the DNA, this approach would rather classify as the second option.
3. Another DNA had chosen an analytic approach, but no formal document had been developed yet. This DNA described that the CDM Steering Committee convened a multi-stakeholder group to comment on project proposals and to discuss with the project proponent. It is difficult to judge upon this practice without further information, but this case seems similar to a generally applied procedure in host countries. This approach would not fit into any of the three options.

The 2 DNAs which classified their approach as a mixture of criteria and requirements with a specific approach named two different procedures: One DNA usually conducts a survey based on an analytic model and applies criteria afterwards. This can be considered a specific approach as it goes further than a simple set of criteria and relies on an analytic model. The other DNA uses the Gold Standard and conducts a needs assessment. The DNA which described its approach as comprising all three options explained that it uses MATA-CDM.

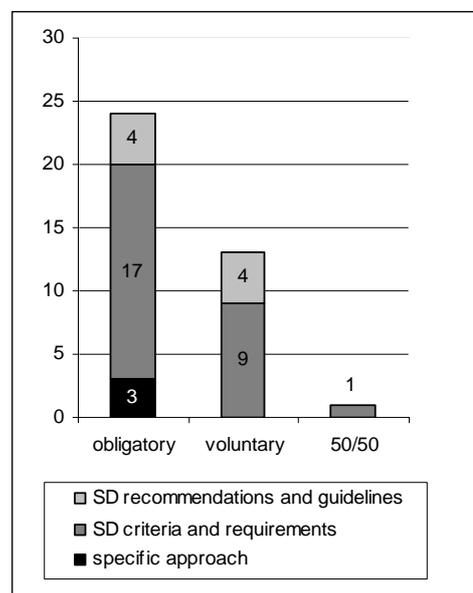
With regard to SD criteria and requirements, the approaches used by the DNAs are manifold and include requirements applied to ODA activities (named by an investor country), national priorities, matrices, checklists, forms with questions to be answered (representing evaluation criteria), (minimal) criteria with/without sub-criteria and/or indicators with/without scoring and/or thresholds. EIA criteria were mentioned in 2 cases as SD criteria for CDM project activities, but can be discarded, as they are general requirements for new projects in many countries.

The 2 DNAs which stated that they used a mixture of criteria and requirements with recommendations and guidelines did in fact not dispose of different approaches. One DNA explained that it relied on the social acceptance of a project activity and the authorization by the respective sectors. Therefore, it recommended that a percentage of the CERs should be spent on social investments. The criteria used were those of the EIA, which is why this approach could only be classified as the third option (SD recommendations and guidelines). The other DNA admitted that no particular approach had been developed so far; thus, this response could not be included in the evaluation.

Consequently, the detailed explanations provided by the interviewees were very useful for cross-checking whether the participants classified their approaches correctly. As this was not always the case, the distribution of types of approaches used was adjusted. This is illustrated in Figure 34 below. The classification into types of approaches does not show how demanding the assessments of the project activities are. To analyze this aspect, in-depths country studies would be needed. The interviewees were then asked to further classify the approaches into obligatory and voluntary approaches, i.e. obligatory approaches are mandatory for a CDM project proposal and voluntary approaches provide only guidance. The survey yielded that the use of most of the approaches is in fact obligatory. Regarding the specific approaches, their use is always mandatory. The usage of the SD criteria and requirements approach is obligatory in two-thirds of the cases and voluntary in one-third. In addition, one DNA described its approach as being voluntary or mandatory depending on the project type (here named 50/50 as the interviewee did). Following the approach of SD recommendations and guidelines is mandatory in half of the cases and voluntary in the other half.



**Figure 34:** Approaches applied by the DNAs (adjusted based on the explanation provided by the interviewees)



**Figure 35:** Obligatory and voluntary use of applied approaches (50/50 = both) as stated by the interviewees

The approaches were not considered equally relevant by the DNAs, project developers and other actors (e.g. stakeholders). The interviewees specified who used the respective approach:

Approach	yes (more)	yes (regular)	yes (less)	not sure
Specific approach (option chosen by 3 interviewees)				
DNAs	0	3	0	0
Project developers	0	3	0	0
Others	0	1	0	1
SD criteria and requirements (option chosen by 27 interviewees)				
DNAs	0	25	1	0
Project developers	1	24	0	1
Others	0	10	4	3
SD recommendations and guidelines (option chosen by 10 interviewees)				
DNAs	1	6	1	0
Project developers	3	5	0	0
Others	0	4	2	0

**Table 32:** Relevance of the respective approaches for DNAs, project developers and others

Table 32 shows that the specific approaches used are all three relevant for DNAs and project developers. Also, the criteria and requirements as well as the recommendations and guidelines are nearly in all cases relevant for DNAs and project developers. In more than half of the cases, the approaches were considered relevant for other actors.

The DNA using the MATA approach differentiated between the relevance of the MATA approach itself and the guidelines to be used: For the DNA, the MATA approach was relevant, but the guidelines less relevant than for the project developers. The project developers did not yet use the MATA approach themselves.

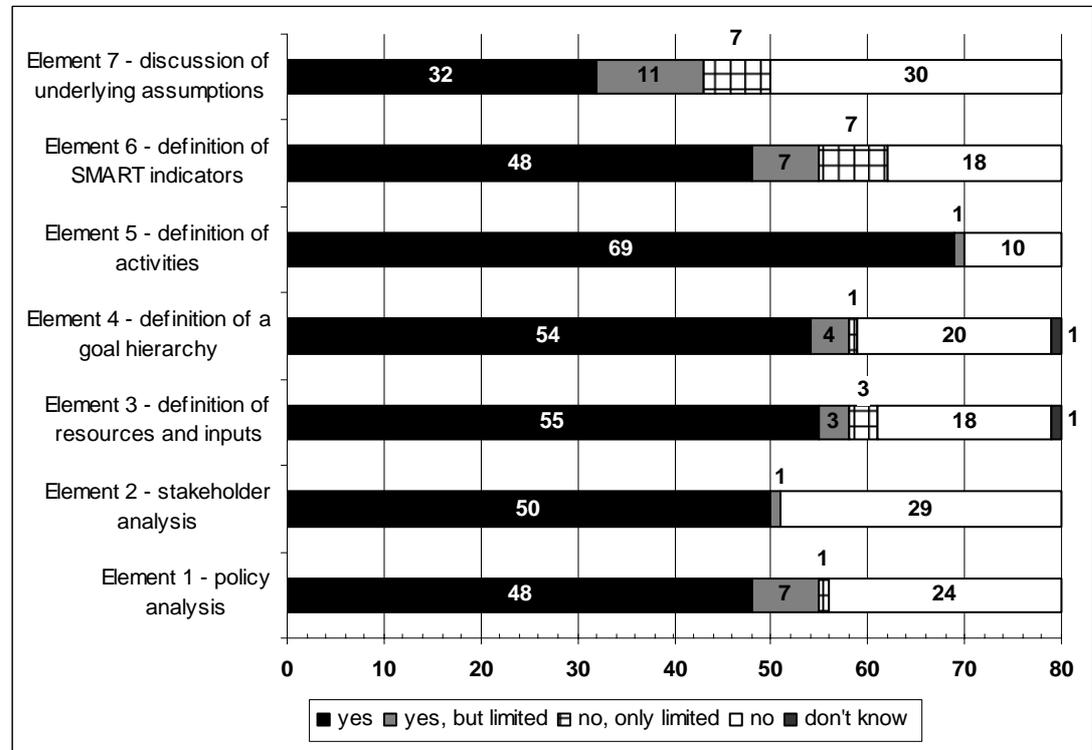
The DNA using the analytic survey as a first step and the criteria as a second step already used the survey, but not yet the criteria. The same is true for the project developers. Others did not yet use the survey or the criteria, but the respective interviewees considered it desirable and stated they would do so in future.

To summarize the findings, in more than 50% of the cases there is no approach used to demonstrate the contribution to sustainable development of a CDM project activity. This confirms the expectations which motivated this research. The approaches already in use are mainly directed to the DNA and the project developers but not as much to others, such as stakeholders. This indicates that the need for active participation of stakeholders in defining sustainable development is still underestimated by the DNAs. 63% of the approaches already used are obligatory. This shows that if the DNAs become active and develop a procedure, the majority considers it as an obligatory minimal standard for CDM project activities.

## 2.4. Experience with the elements of the SMA

The majority of interviewees had already experience with the elements of the SMA. The following figure shows the distribution per element. Apart from Element 7, the majority of the interviewees had experience with the tools composing the SMA. The *grey area* between a positive or negative answer indicates that the interviewees could not definitely decide for either *yes* or *no*. They declared, for instance, that the element was used but not exactly as described in the introduction to the SMA. Instead, it was applied to the proposals partly, indirectly or implicitly. The last two elements – 6 and 7 – have the biggest *grey area* of answers. For Element 6, some interviewees clarified that they had developed indicators, but that

these were not always SMART. For Element 7, the interviewees also clarified that they had experience with the approach (e.g. applied at university) but not in practice. All in all, the interviewees showed a strong recognition effect with regard to the elements of the SMA. Therefore, the majority of them should be able to provide valuable comments regarding the elements of the SMA.



**Figure 36:** Personal experience of the interviewees with the elements of the SMA

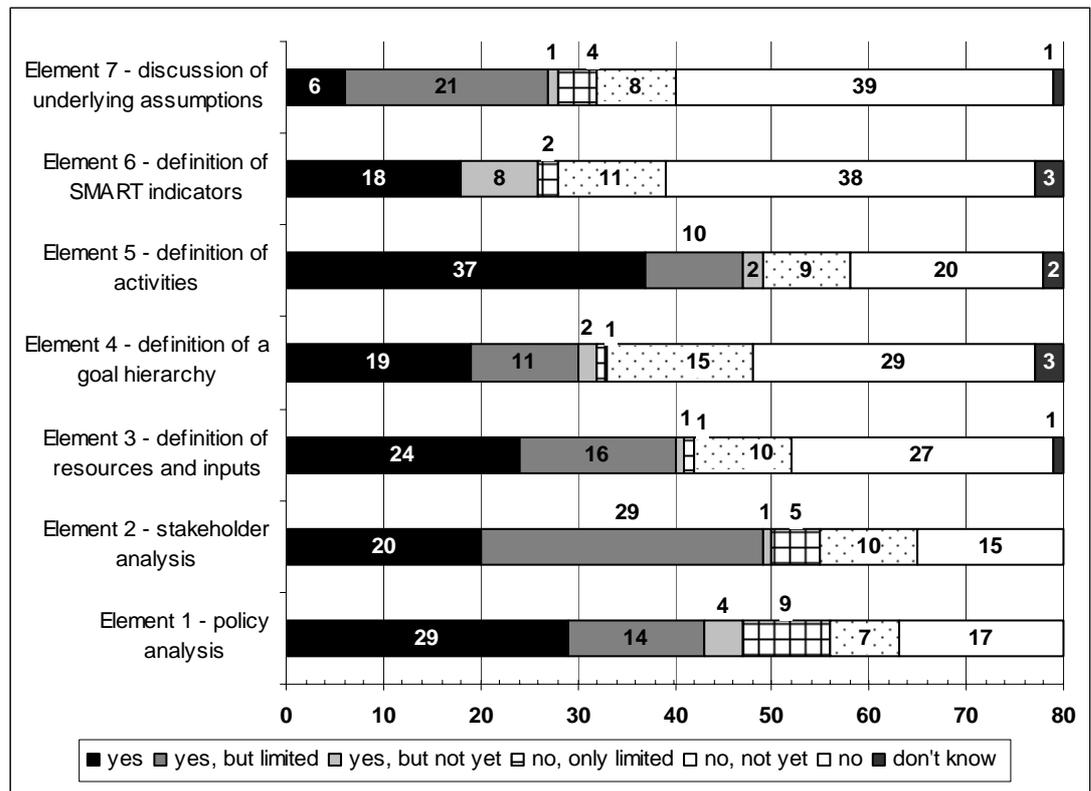
## 2.5. Current use of the elements of the SMA

When analyzing the current use of the elements composing the SMA<sup>145</sup>, it can be seen that each element is already applied somewhere (see Figure 37). Some elements are even quite broadly applied. This is the case for Element 1, Element 2, Elements 3 and 5. However, some interviewees stated that specific elements are only implicitly<sup>146</sup> used (see grey area in the figure). Performance measurement with regard to the sustainable development aspects of CDM project activities is not far advanced: Elements 4 and 6 are not yet much considered. The element least implemented is Element 7. Only 6 of the 80 DNAs interviewed stated that this element is applied. 21 DNAs stated, however, that it was implicitly<sup>147</sup> used. Nevertheless, a considerable number of the DNAs does not yet use the elements of the SMA at all: about 30% for Elements 1 and 2, about 37% for Elements 3 and 5, 55% for Element 4, 59% for Element 7, and, the least, 61% for Element 6.

<sup>145</sup> The quality of the current procedures of the DNAs cannot be assessed here. An in-depth analysis would be required for that. Over-reporting cannot be excluded.

<sup>146</sup> “Implicitly” can mean that the aspects covered by the SMA are discussed in the meeting of the CDM committee when considering CDM project proposals. In case of Element 2, “implicitly” stands for the fact that a stakeholder consultation was carried out.

<sup>147</sup> Pros and cons of a project are discussed with the project proponent and stakeholders, but this does not mean that the underlying assumptions are systematically discussed.



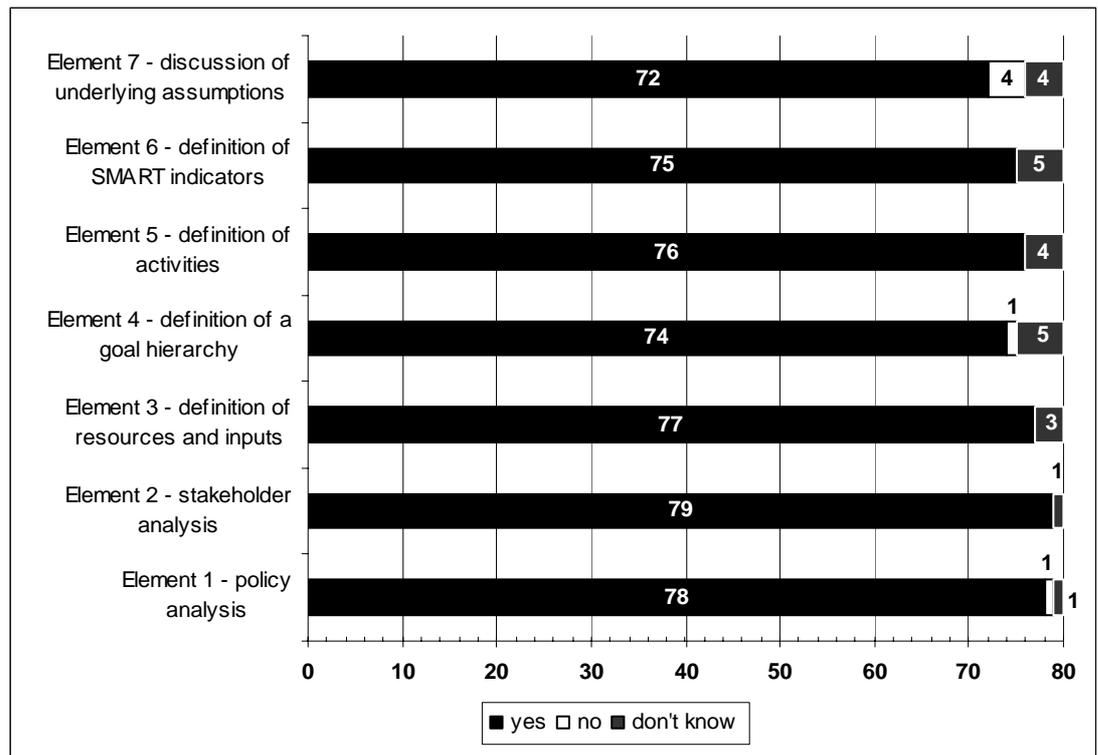
**Figure 37:** Current use of each of the elements of the SMA by the DNAs to evaluate CDM project activities

This shows that the use of the elements of the SMA stays behind the experience the participants have had with the individual elements of this approach. Nevertheless, as each of the elements has already been used to some extent for CDM project activities, it can be concluded that it is an accepted way of approaching the topic of sustainable development.

## 2.6. Usefulness of the elements of the SMA

### 2.6.1. Quantitative results

As a next step, the interviewees were asked whether they considered the elements of the SMA useful for the planning and/or evaluation of CDM project activities. The analysis shows that the survey participants were very convinced of the elements of the SMA. 90% and more of the interviewees, i.e. even more than 60% of the entire universe of the DNAs, considered each of the elements of the SMA useful. The interviewees were especially convinced by Elements 1 and 2. Elements 4, 6 and especially 7 encountered slightly more scepticism than the other elements.

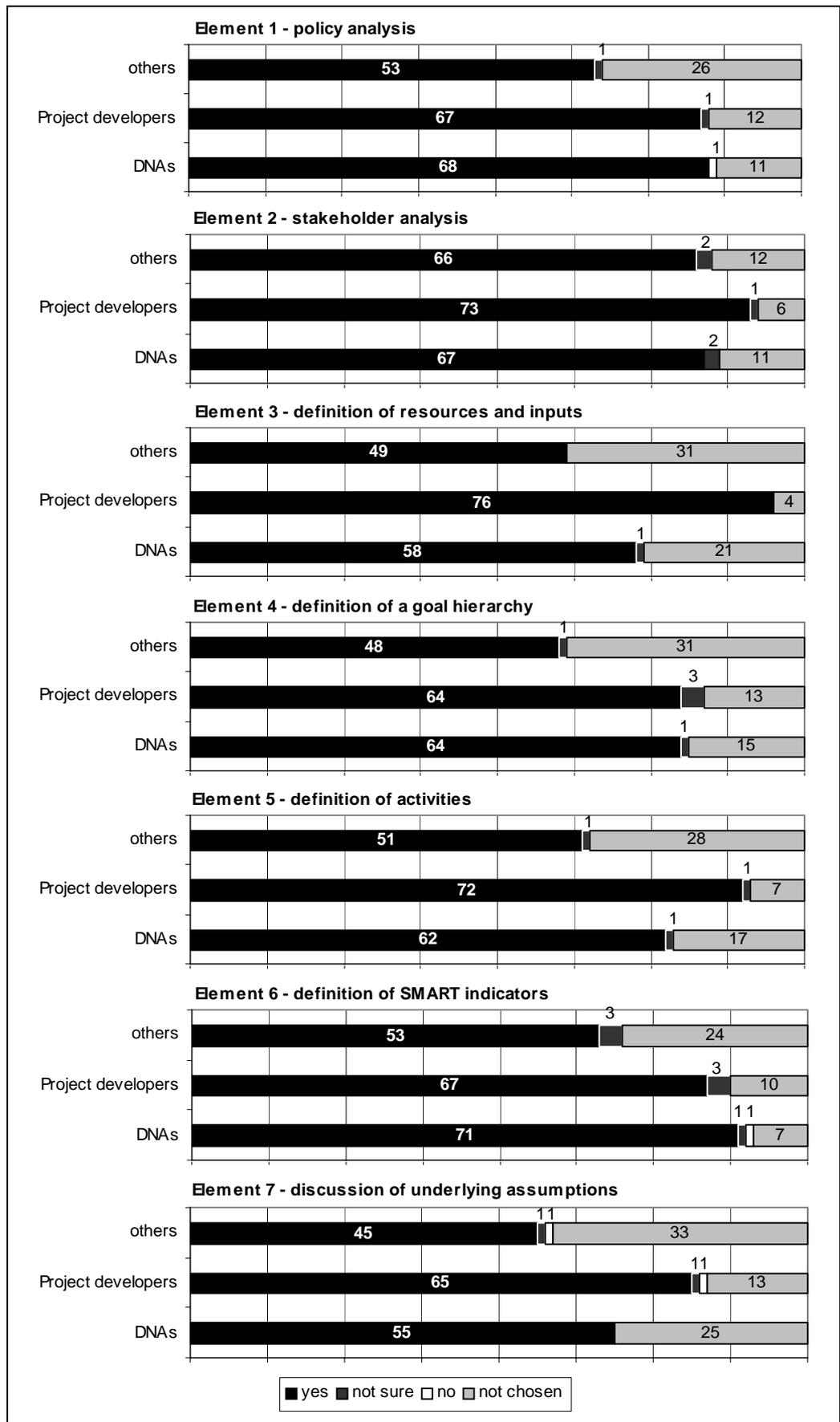


**Figure 38:** Usefulness of the elements of the SMA as valued by the interviewees

Usefulness of the elements of the SMA						
	yes	universe (%)	no	universe (%)	don't know	universe (%)
Element 1 %	78	66.67%	1	0.85%	1	0.85%
Element 2 %	79	67.52%	0	0%	1	0.85%
Element 3 %	77	65.81%	0	0%	3	2.56%
Element 4 %	74	63.25%	1	0.85%	5	4.27%
Element 5 %	76	64.96%	0	0%	4	3.42%
Element 6 %	75	64.10%	0	0%	5	4.27%
Element 7 %	72	61.54%	4	3.42%	4	3.42%

**Table 33:** Usefulness of the elements of the SMA as valued by the interviewees

The interviewees were then asked to further specify to whom they considered the individual element especially useful. The following graph illustrates that the other actors such as stakeholders were included less in the interviewees' consideration than the DNAs and the project developers.



**Figure 39:** Usefulness of the elements of the SMA per actor as valued by the interviewees

Usefulness of the elements of the SMA per actor as valued by the interviewees						
	DNAs	PDs	others	DNAs	PDs	others
	<b>Element 1</b>			<b>Element 2</b>		
yes	68 (85%)	67 (84%)	53 (66%)	67 (84%)	73 (91%)	66 (83%)
not sure	0 (0%)	1 (1%)	1 (1%)	2 (3%)	1 (1%)	2 (3%)
no	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
not chosen	11 (13%)	12 (15%)	26 (33%)	11 (13%)	6 (8%)	12 (15%)
	<b>Element 3</b>			<b>Element 4</b>		
yes	58 (73%)	76 (95%)	49 (61%)	64 (80%)	64 (80%)	48 (60%)
not sure	1 (1%)	0 (0%)	0 (0%)	1 (1%)	3 (4%)	1 (1%)
no	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
not chosen	21 (26%)	4 (5%)	31 (39%)	15 (19%)	13 (16%)	31 (39%)
	<b>Element 5</b>			<b>Element 6</b>		
yes	62 (78%)	72 (90%)	51 (64%)	71 (89%)	67 (84%)	53 (66%)
not sure	1 (1%)	1 (1%)	1 (1%)	1 (1%)	3 (4%)	3 (4%)
no	0 (0%)	0 (0%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)
not chosen	17 (21%)	7 (9%)	28 (35%)	7 (9%)	10 (13%)	24 (30%)
	<b>Element 7</b>			<b>All elements on average</b>		
yes	55 (69%)	65 (81%)	45 (56%)	64 (79%)	69 (86%)	52 (65%)
not sure	0 (0%)	1 (1%)	1 (1%)	0 (1%)	1 (2%)	1 (2%)
no	0 (0%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)
not chosen	25 (31%)	13 (16%)	33 (41%)	15 (19%)	9 (12%)	26 (32%)

**Table 34:** Usefulness of the elements of the SMA per actor as valued by the interviewees

Nevertheless, other actors were still pointed out by more than 50% of the DNAs in the context of each of the elements. The element considered useful to the DNAs by most of the interviewees was Element 6. The one considered least useful (but still by nearly 69% of the DNAs) was Element 7. Concerning project developers, the participants regarded Elements 2, 3 and 5 as particularly useful. The element considered least useful to the project developers (but still rated positively by 80% of the interviewees) was Element 4. Furthermore, over 80% of the survey participants considered Element 7 useful to project developers. For other actors, Element 2 was identified as most important, as could have been expected. In addition, the policy analysis and the definition of indicators<sup>148</sup> were chosen by 66% of the participants. The element considered least relevant for other actors was the discussion of underlying assumptions.

Reasons for these judgments will be examined in section 2.6.2 of this chapter.

To sum up, the elements of the SMA were strongly accepted by the interviewees. The majority of the participants considered all elements relevant for the DNAs, the project developers and others.

## 2.6.2. Qualitative results

The above-presented statistical results can be corroborated by examining more closely the comments provided by the interviewees (in many cases multiple answers were provided). Only the outstanding aspects will be presented here. A detailed analysis is included in Annex 8.2.

**Element 1 – Policy analysis:** The policy analysis was considered useful for project management delivering indicatory information for the definition of sustainable development. However, such an analysis should at best be prepared by the DNAs as they know the regulatory framework in detail. They would thereby considerably lessen the effort to be made by project developers.

<sup>148</sup> This is in line with Searcy et al. (2005) who points out the need to involve stakeholders in the definition of sustainability indicators.

**Element 2 – Stakeholder analysis:** The stakeholder analysis was considered useful for reaching acceptance and support, which can help to decrease the transaction costs of the project. The participants underlined the increased transparency and the new insights Element 2 would generate.

**Element 3 – Definition of resources and inputs:** The survey participants emphasized resources and inputs mainly under financial aspects. Since the definition of resources and inputs helped to ensure the successful implementation of a project activity, it was considered relevant for project developers carrying the project risk. Furthermore, the DNAs stated that a clear definition of resources and inputs would facilitate the approval of a project activity.

**Element 4 – Definition of a goal hierarchy:** The DNAs recognized that this was a systematic approach which helped to structure the project activity – a means of prioritization and dealing with trade-offs. An agreed goal hierarchy could ensure the collective preferences are reflected. The goal hierarchy was considered useful for project planning/management supporting a successful realization as well as for a follow up evaluation. It provided transparency, helped to communicate concepts and promoted understanding. Furthermore, the DNAs stated that the definition of the goal hierarchy would facilitate a smooth approval.

**Element 5 – Definition of activities:** The interviewees stated that this element improved transparency and increased understanding. The activities should reflect the societal consensus. The element was generally considered useful for project management. However, some participants also highlighted potential difficulties for evaluation: The DNAs would have to check the outcome, but this would require a big effort and resources. Alternatively, the evaluation could be carried out by DOEs, but as those were not accredited for SD issues, the quality of this assessment was precarious. Furthermore, the DNAs stated that the definition of activities was necessary for compliance and would facilitate a smooth approval.

**Element 6 – Definition of SMART indicators:** The element was considered useful for project management, for project success and for proving the achievements. To act in line with stakeholder needs, participation of stakeholders and experts should be ensured. To avoid the definition of indicators becoming a complex exercise, the goal hierarchy had to be kept clear and simple. It was criticized that under the current practice the project developers did not make any efforts to simplify the description of the SD benefits. They provided vague verbal indications without quantification.

**Element 7 – Discussion of underlying assumptions:** For this element, a skilled facilitator would be needed. The participants considered the element useful for reducing risk, identifying gaps and preventing failure and conflicts. In addition, it promoted more equilibrated results as well as enhanced understanding and involvement. However, the discursive element could create difficulties in some constellations: The element is confrontational and achieves consensus via negotiation. This allows for non-agreement which helps to detect gaps and weaknesses in a strategy. However, if the application is not guided by a knowledgeable facilitator, it could create dissent. Therefore, the element should mainly be applied internally to question the strategy to make it waterproof. It could also be used with the DNA if there is room for an open and honest discussion, as sensitive political data could be touched. Whether it is appropriate to use it with stakeholders has to be decided

in the concrete case. The facilitator would for instance need the skill to translate complex into the language of rural population. If applied during the stakeholder consultation, conflicts could escalate. Apart from this, the element might also encounter cultural barriers: In some countries, the participants may have difficulties with such a discursive approach due to their political past, because the people are used to authoritarian governance. It would have to be tested in practice whether/how (maybe in an adapted way) this element is applicable under such conditions.

## 2.7. Overall judgment

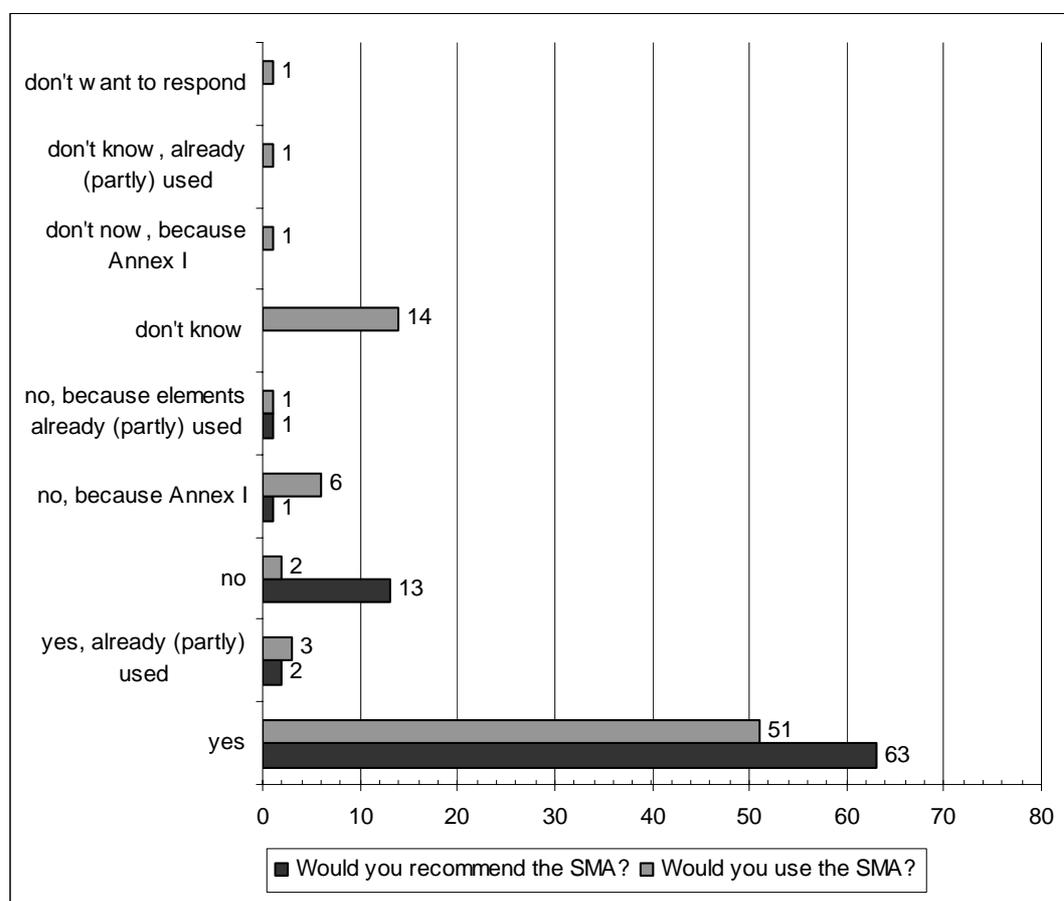
### 2.7.1. Quantitative results

At the very end, the interviewees were asked to provide a synoptic judgment on the SMA. They were asked whether they would recommend the approach and whether they would themselves use the approach.

The two figures show that the majority of the survey participants were convinced of the SMA. 79% of the interviewed DNAs would recommend the approach and 66% of them would use it themselves.

One Annex I DNA was not sure whether to recommend the SMA, because it was so much involved in the topic. 16% of the DNAs were not sure and only 2 DNAs did not recommend the approach. One DNA did not want to give its opinion.

6 of the Annex I DNAs declared that they would not use the approach because it is not their responsibility to assess the CDM project activities; instead, it is a host country issue. One Annex I DNA did not know for the same reasons. 18% of the DNAs did not know whether they would use the SMA.



**Figure 40:** Potential recommendation and use of the SMA as stated by the interviewees

One DNA did not want to use the SMA because the elements were already used to some extent and one DNA did not know for the same reasons. One DNA did not want to give its opinion.

To sum up, the SMA met with strong acceptance among the interviewees. This indicates an opportunity for consensus among the DNAs.

Potential use of the SMA as stated by the interviewees	Potential recommendation of the SMA as stated by the interviewees						Total	% of the universe
	yes	no	don't know	don't know; Annex I	don't want to respond			
yes	49 61%	1 1%	1 1%	0 0%	0 0%	<b>51</b> <b>64%</b>	43.59%	
yes, already partly used	2 3%	0 0%	1 1%	0 0%	0 0%	<b>3</b> <b>4%</b>	2.56%	
no	1 1%	1 1%	0 0%	0 0%	0 0%	<b>2</b> <b>3%</b>	1.71%	
no, because Annex I	4 5%	0 0%	2 3%	0 0%	0 0%	<b>6</b> <b>8%</b>	5.13%	
no, because elements already (partly) used	1 1%	0 0%	0 0%	0 0%	0 0%	<b>1</b> <b>1%</b>	0.85%	
don't know	6 8%	0 0%	8 10%	0 0%	0 0%	<b>14</b> <b>18%</b>	11.97%	
don't know, because Annex I	0 0%	0 0%	0 0%	1 1%	0 0%	<b>1</b> <b>1%</b>	0.85%	
don't know, already partly used	0 0%	0 0%	1 1%	0 0%	0 0%	<b>1</b> <b>1%</b>	0.85%	
don't want to respond	0 0%	0 0%	0 0%	0 0%	1 1%	<b>1</b> <b>1%</b>	0.85%	
Total	<b>63</b> <b>78%</b>	<b>2</b> <b>3%</b>	<b>13</b> <b>16%</b>	<b>1</b> <b>1%</b>	<b>1</b> <b>1%</b>	<b>80</b> <b>100%</b>	68.38%	
% of the universe	53.85 %	1.71 %	11.11 %	0.85 %	0.85 %	68.38 %		

**Table 35:** Potential recommendation and use of the SMA as stated by the interviewees

### 2.7.2. Qualitative results

The participants were given the opportunity to provide general comments and feedback at the very end of the interview. Thereby, the author wanted to ensure that all possible concerns and ideas were heeded.

It was stressed that the SMA was comprehensive and provided the needed guidance on how to proceed to demonstrate the contribution to sustainable development as well as to analyze the project activity systematically. The SMA was generally considered to match current practice and to fill gaps. The interviewees thought the use of the SMA would reduce project risk, increase transparency, and help to structure the ideas as well as to establish a logic flow. Furthermore, it was pointed out that the SMA helped to involve/represent the stakeholders. It was underlined that the effort required to apply the SMA should be kept as small as possible, the approach should not become too complex and that the details of implementation might provoke more work than anticipated. Therefore, the survey participants recommended to test the SMA in practice and asked for more details as well as concrete examples on how the SMA should be applied. Possibly, some adaptations would be necessary when broadly applied in practice. In the end, the use of the SMA would then be a political decision. A post-approval analysis of project activities was considered important. The participants expressed their interest in quantitative indicators, but also recognized also the limits to quantification. Some detailed suggestions for further development were made: To classify the

underlying assumptions, first, another wording should be used for the rating ('high-potential' and 'low-potential' assumptions) and second, the assumptions should be differentiated along economic, social, environmental, cultural, local and global impact. One interviewee suggested including a further element addressing the responsibility of the project developers regarding anti-corruption measures. Another participant asked for a translation into French because otherwise the SMA would not be read in some African countries. Only a minority of the interviewees (4) asked for an even further simplification.

### 2.7.3. Experience and judgment

When comparing the experience of the interviewees with an element and their judgments on it, it becomes apparent that the negative answers regarding usefulness were given by interviewees without experience, with one exception – Element 7.

Have you personally ever systematically applied this element in your working life?	Do you consider the element useful, e.g. for project planning, evaluation?			
	yes	no	don't know	Total
<b>Element 1</b>				
yes	48	0	0	48
no	22	1	1	24
yes, limited	7	0	0	7
no, limited	1	0	0	1
don't know	0	0	0	0
<b>Element 2</b>				
yes	49	0	1	50
no	29	0	0	29
yes, limited	1	0	0	1
no, limited	0	0	0	0
don't know	0	0	0	0
<b>Element 3</b>				
yes	54	0	1	55
no	16	0	2	18
yes, limited	3	0	0	3
no, limited	3	0	0	3
don't know	1	0	0	1
<b>Element 4</b>				
yes	50	0	4	54
no	18	1	1	20
yes, limited	4	0	0	4
no, limited	1	0	0	1
don't know	1	0	0	1
<b>Element 5</b>				
yes	66	0	3	69
no	9	0	1	10
yes, limited	1	0	0	1
no, limited	0	0	0	0
don't know	0	0	0	0
<b>Element 6</b>				
yes	45	0	3	48
no	17	0	1	18
yes, limited	7	0	0	7
no, limited	6	0	1	7
don't know	0	0	0	0
<b>Element 7</b>				
yes	31	1	0	32

no	26	1	3	30
yes, limited	10	1	0	11
no, limited	5	1	1	7
don't know	0	0	0	0

**Table 36:** Experience and judgment

The last element is the one with the highest insecurity among the participants regarding its usefulness. Points of criticism referred to the discursive process which allowed for disagreement, and to being “too ambitious” to be implemented, according to some participants.

### 3. Non-response

The validity of statistical tests is limited due to the very small universe which is identical with the sample. In addition, the group of interviewed DNAs could not be selected randomly because participation was voluntary. Statements regarding the significance of contingency are therefore not meaningful (Bortz, 2005). Statistical tests were thus only carried out to develop some estimates of how the non-respondents could have answered. To be able to develop the 4x4 matrices, which are needed for the exact Fisher test, the answers were simplified into *yes* and *not yes*. The regions were examined one by one, comparing one region e.g. *AFR* to the other regions, i.e. *not AFR*. For the following analysis, a significance level of 1% is used.

The conclusion from the examination of contingencies is that the answers are neither dependent on the region of the DNA nor on the experience of the DNA. Only in one case, a significant contingency was observed: The countries from the group *Western countries and other countries* tended towards not wanting to use the SMA, but this result is not surprising as these are Annex I countries usually not involved in the assessment of the contribution to sustainable development. Therefore, apart from this aspect, no statements regarding the answers the non-respondents would have provided can be made. As there are no indications for bias due to sampling, the results of the respondents are likely to reflect what non-respondents would have answered. (For the details on the tests, please refer to Annexe 9.)

## 4. Limits of the survey

### 4.1. Over-reporting

A first limitation of the survey is owed to the political importance of the topic. A certain over-reporting by the interviewees cannot be excluded, as the interviewees knew that there would be a comparison between the DNAs. To rank well in relation to other countries, interviewees might have over-reported their DNA's performance when describing the current practice.

### 4.2. Over-acquiescence

Another issue is that the interviewees might not have stated openly their concerns regarding the SMA in order not to deceive the interviewer (*yea-saying*). This problem cannot be completely excluded, but the interviewer did her very best to ensure true answers by explicitly asking for any criticism and explaining that the reason for the survey was to improve the SMA. In addition, it was guaranteed to the participants that the information provided would be treated confidentially and that no link would be made to their person.

### 4.3. Fuzzy data

A distinction has to be made between data which is fuzzy because it has not been clearly specified and data which is inherently fuzzy, i.e. which by nature belongs to several categories. Fuzzy data in the first sense was collected regarding the current practice of the DNAs. For further information on the current practice, in-depth country studies would be needed. The inherently fuzzy data regarding the perception of the SMA could be classified into categories following the content analysis. The open comments provided by the DNAs were too heterogeneous for a detailed quantitative content analysis (only answers per topic were counted), which is why a qualitative content analysis was used. Answers matching several categories were included in each of the respective categories. This process was documented transparently by citing each comment (see Annexe 8). Further statistical analysis for fuzzy data was not applied due to the high heterogeneity of the data.

### 4.4. Differentiation

In one case, an interviewee provided differentiated answers for CDM project activities undertaken by the government and those carried out under the European linking directive. The answers for the governmental project activities were used for this analysis as the conditions for the project activities under the linking directive are not under the influence of the respective DNA.

## 5. General Conclusions

More than 50% of the interviewed DNAs had no approach yet in place to analyze the contribution to sustainable development of a CDM project activity. Existing approaches were mainly intended to be used by the DNAs and the project developers, and only secondarily by others such as stakeholders.

The elements of the SMA were broadly known: Between 52.5% and 87.5% of the interviewees, depending on the element considered, had already had some experience in using a respective element. However, the application of the elements to CDM project activities had stayed much behind. Between one-third (32.5%) and about two-thirds (62.5%) of the DNAs already used some elements of the SMA.

With regard to the usefulness, the elements of the SMA met with great acceptance: Between 90% and 98.75% of the interviewees considered the different elements useful. The SMA was considered useful to project developers (between 80% and 95% depending on the element) in particular, but also to DNAs (between 68.75% and 85%) and others (between 56.25% and 82.5%).

The survey showed that the DNAs generally champion the SMA: Most of the interviewees would recommend the approach (78%, i.e. 54% of the universe, even without knowing the answers of the non-respondents) and use the approach (68%, i.e. at least 46% of the universe). A few did not opt for using the approach because they belonged to DNAs of Annex I countries not involved in the sustainability discussion (9% in the sample, which makes 6% of the universe). Others did not opt for using the approach as it was already partly applied in their country (3%, amounting to 1.71% of the universe). 90% and more of the interviewees considered each the seven elements of the SMA useful. This translates to a clear majority of all DNAs even including those who did not participate<sup>149</sup>: Over 60% of all DNAs were convinced of the single elements of the approach. The policy analysis could at best be carried out by the DNAs because they dispose of the expert

---

<sup>149</sup> As of January 2007.

knowledge. According to the interviewees, the SMA would support the approval. It was considered comprehensive, no gaps were identified. The participants were convinced that the SMA matched the current practices. The increased transparency facilitated risk reduction and the building a common understanding. Therefore, it was considered useful for project planning, implementation and evaluation. The post-approval analysis was, however, identified as a challenge because the DOEs are not accredited for sustainable development issues and the DNAs usually do not dispose of the capacity. Furthermore, the participants considered the definition of SMART indicators difficult, as expert knowledge might be needed depending on the activities concerned. The questioning of assumptions to detect gaps and conflicting aspects was supported by the interviewees, especially for being used inside the project developing companies, but in some constellations (depending on cultural conditions or in case of simmering conflicts which might escalate) the element could probably not be applied without changes.

Estimates of how the non-respondents would have answered cannot be made as no correlations could be identified, apart from one exception: Annex I DNAs tend not to have the intention to use the approach because they are not directly involved in the assessment of the contribution to sustainable development.

The survey clearly demonstrated that there is a severe lack of evaluation methods as regards CDM project activities under sustainability aspects. Even under the worst assumptions with regard to the non-participants (e.g. none of them support the SMA), the majority of all DNAs is in favour of using the SMA to fill this gap.

## Chapter VIII – Recommendations and conclusions

The experience from development aid and from various United Nations conferences leads to the insight that the developing countries (represented by the Group of 77 and China) unmistakably advocate the freedom to define sustainable development independently and locally. They are not willing to limit their opportunities by global sustainable development criteria. This position is reflected in the modalities and procedures of the CDM: it is the task of the DNAs of the host country to assess whether a project activity assists it in achieving sustainable development. Due to the competition for investments, the DNAs, however, tend to go into tactical inactivity regarding transparent and operational selection criteria. The drawback: this behaviour comes along with a higher risk for unsustainable practices under the umbrella of the CDM. In that case, the DNAs would have missed their mission. To find a way out of this dilemma, an approach had to be identified providing the DNAs with the necessary information while supporting the project developers in conducting their activities with the aim to prevent reactance from their side.

Thus, the aim of this PhD study was to answer the following research question: Which approach would be suitable to assist DNAs in overcoming their dilemma?

1. Business side: Is the selected approach applicable in practice, i.e. does it assist project developers in elaborating their concepts and strategies?
2. Policy side: Do the DNAs consider the selected approach worth applying?

### 1. Research results

#### 1.1. Review of literature

The review of the literature showed, first of all, that there is a common basis which constitutes the concept of sustainable development: The triad composed of the economic, the environmental and the social dimension of sustainable development, as well as the question of equity distribution and responsibility – both among today's generations as well as regarding future generations.

The complexity and context-specificity of sustainable development has, however, created difficulties for management and for evaluation. Objective decision-making and assessment are not possible without relying on certain value judgments concerning the goals to be achieved in the concrete constellation. For legitimacy, the interested and affected parties, i.e. the stakeholders, should get involved and receive the opportunity to participate in this discussion to insure that their needs are taken into account.

The literature review further demonstrated that there are plenty of concepts and instruments addressing sustainability management and evaluation, but they did not serve the purposes of CDM project activities. However, useful basic elements of the approaches needed for both management and evaluation could be identified. Those were combined in a new approach, the SMA, which was broken down into seven elements. In addition, ten guidelines were derived from theory to guide the users of the SMA in decision-making and evaluation.

To gain insights into the usefulness and applicability of the approach, the author decided to analyse the research question empirically by conducting three case studies with project developers and a global survey among all DNAs.

In addition, ten guidelines were derived from theory to guide the users of the SMA in their decision-making.

The case studies provided answers to the business aspect of the research question and the survey to the policy aspect of the research question.

## 1.2. Case studies

Each element of the SMA contributed to the content of the sustainability strategy. Project developers at an early project stage, however, had difficulties with Element 3 (definition of resources and inputs) and Element 6 (definition of SMART indicators), because the activities had not yet been sufficiently specified and would need further discussion within the company, with the DNA and with the stakeholders.

The applicability varied from step to step: Elements 2 (stakeholder analysis), 4 (definition of a goal hierarchy) and 5 (definition of activities) were generally applicable. Limited applicability was detected for Element 1 (policy analysis): guidance on relevant sustainable development criteria from the DNA would help project developers to carry out this step. Furthermore, limited applicability was demonstrated for project activities at early stages for Elements 3 (definition of resources and inputs) and 6 (definition of SMART indicators) due to the reasons mentioned above. Element 7 (discussion of underlying assumptions) was only restrictedly applicable to the one-man company due to the need for a variety of ideas. In micro-enterprises consisting of one or very few people, the diversity of ideas is limited, which prevents the full application of the discursive elements. In such cases, external persons have to be involved. Apart from that, a facilitator would be needed to guide the discussion.

During the development of the pathway of sustainable development, the 10 guidelines were addressed. The project developers took the three dimensions of sustainable development into account and adopted a broad view beyond the narrow boundaries of the project activity. They recognized the need to embed and institutionalize sustainable development, the need to involve stakeholders and the need for organizational learning in the area of sustainable development. The detailed documentation of the case studies enhanced transparency considerably. Accountabilities were specified. Operationalization was addressed to the extent SMART indicators were defined. By developing a pathway of sustainable development, the companies adopted a pro-active attitude. They also expressed their intention to continue using the SMA. All were willing to compensate potential negative impacts.

During the case studies, a first version of a sustainability strategy for the project activity was developed. This required between six to eight hours of the participants' time. As a follow-up, the sustainability strategy should be further adapted throughout the CDM project cycle. All three companies improved their understanding of sustainability; they all appreciated the approach and could imagine using it in future. On top, the SMA matched well the CDM procedures in Peru.

Nevertheless, the quality of the results generated by the SMA depends on the way it is implemented. Several aspects could lead to poor results: The selection of the participants for the internal discussions can bias the view on the project activity, if not chosen representatively. Furthermore, the selection of the key stakeholders during so-called *informal consultations* can bias the view on the project activity, if not chosen representatively. Some stakeholders may become dominant. A certain bargaining (typical of any negotiation process) may occur during stakeholder dialogues, which could influence the quality of the strategy and lead to opportunistic behaviour. Therefore, the DNAs should define procedures that representatives of vulnerable and weak stakeholders should be involved early enough in the process of strategy elaboration. Documentation of stakeholder involvement is needed for transparency reasons.

An impartial facilitator is strongly recommendable to guide the process, to moderate and lead group discussions, to ask probing questions and to summarize the

results. In particular, when stakeholders take part, the facilitator should be experienced to prevent misunderstandings, escalation and bias.

Due to the discursive character of the SMA, further difficulties can arise due to cultural factors, the mentality of the top management or the hierarchical structure of the company.

### 1.3. Survey

Based on the evaluation of the current assessment practices of the DNAs, which revealed that there were not many tangible approaches implemented, a thorough assessment of the contribution to sustainable development is unlikely in most countries.

The survey showed that the DNAs generally champion the SMA: The majority of the interviewees would recommend the approach (78%, i.e. 54% of the universe, even without knowing the answers of the non-respondents) and use the approach (68%, i.e. at least 46% of the universe). Some interviewees did not opt for using the approach because they belonged to DNAs of Annex I countries not involved in the sustainability discussion (9% in the sample, which makes 6% of the universe). Other interviewees did not opt for using the approach as it was already partly applied in their country (3%, amounting to 1.71% of the universe). The seven elements of the SMA were all considered useful by 90% and more of the interviewees. This translates to a clear majority of all DNAs<sup>150</sup>: Over 60% were convinced of the single elements of the approach. No gaps were identified by the interviewees.

Several interviewees recognized that the policy analysis was a task the DNAs could assume without difficulty and thereby support the project developers. It was pointed out that the DNAs should provide guidance on development priorities to the project developers.

Stakeholder involvement was considered key to prevent arbitrariness and conflicts. To adequately involve stakeholders not knowledgeable about the topic in the process, a facilitator with a social-science background and experience with focus groups is strongly recommended. This would help to prevent open conflicts during consultation. In addition, there are general handbooks available on stakeholder involvement.

The DNAs recognized that the systematic approach was essential for project management as well as for evaluation. Furthermore, it promoted transparency and mutual understanding. However, it was mentioned that the discursive elements of the SMA might not run as smoothly due to cultural or intellectual barriers: e.g. in companies with strong hierarchical structures, in countries marked by a non-democratic past and/or reality or together with stakeholders not well informed about the topic. For instance, the discussion of underlying assumptions could be applied together with stakeholders, but it is hazardous as it aims at creating an initial non-agreement before reaching a consensus. Therefore, if this option is chosen, an experienced facilitator has definitely to be assigned.

The definition of SMART indicators was appreciated but two points were raised which might be challenging: first, the identification of the right indicators can be complex depending on the kind of activities to be implemented and the need to involve the stakeholders at that step. Second, it has not been clarified who should assess the project activities after the approval. The DNAs have only limited possibility of intervention and the DOEs are not accredited for sustainability aspects,

---

<sup>150</sup> As of January 2007

i.e. their capacity to appraise the contribution to sustainable development would stay nebulous.

Estimates of how the non-respondents would have answered cannot be made as no correlations could be identified, apart from the fact that Annex I DNAs tend not to have the intention to use the approach because they are not directly involved in the assessment of the contribution to sustainable development.

The results of the study could have been affected by cultural, historical or political conditions and potential interviewer effects. There is a risk for over-reporting and over-acquaintance: It cannot be tested whether the answers provided were honest, especially as sustainable development is a politically sensitive topic in the context of the CDM. Therefore, the value of the SMA will have to be judged upon broader application.

## **2. Outlook**

The results showed that the SMA encountered widespread acceptance. This indicates that there might be a potential for consensus among the DNAs.

To implement the SMA, the DNAs should require transparent information from their project developers with regard to the contribution to sustainable development by CDM project activities. The DNAs could simply recommend the SMA or even demand its application in their country. This would lead to a standard process, either informally or formally.

Furthermore, the SMA should be explicitly linked to the respective section on sustainable development of the PDD. The indicators to demonstrate the contribution to sustainable development by the CDM project activity should be included in the monitoring protocol. This procedure should be recommended to the project developers by the DNAs (as the tools which the EB recommends to use).

While trying to achieve contributions to sustainable development, the increase in bureaucracy has to be prevented. Therefore, the SMA was intentionally kept as lean as possible, focusing on the basic elements needed by project developers for project management and by the DNAs for evaluation of the contribution to sustainable development. The SMA unveils the logical connections between the main goals, the sub-goals and the activities of a sustainable development strategy and thereby considerably increases the understanding of sustainable development. In addition, SMART indicators are specified for management and monitoring. Such a transparent strategy can be better evaluated by DOEs and/or DNAs. Trade-offs could be explicitly included by further quantifying the goals as in multi-criteria decision-making. However, this approach was not chosen as a general one because it quickly becomes very complex and more difficult to apply. The use of different methods could further enhance the viability of the results of the SMA. During the validation (*ex ante*), normative theory should be examined: The sustainable development strategy should be checked for logical inconsistencies, for instance, by using a simplified version of the policy scientific approach (Leeuw, 2003) presented in Chapter II. The verification of the outcomes (*ongoing*) would have to check whether the activities have been carried out and the indicators have been met, focusing on causative theory. The causal chain should be examined at least up to short-term effects. If possible, mid-term (or even long-term) effects should be estimated, however, the attribution to a single project activity may often be questionable.

The SMA can help project developers to formulate and implement their own sustainability strategy. It takes into account existing policies, stakeholder needs, clarifies resources and inputs, and systematically operationalizes goals through activi-

ties and indicators. The entire strategy is questioned in order to detect gaps and weaknesses. The monitoring is to provide information for feedback processes and to inform stakeholders and the interested public about the achievements. Regular audits by external certifiers are facilitated.

The current CDM procedures already comprise participative elements to prevent arbitrariness (i.e. procedural rationality is followed). The quality control through participation should take place at all levels following the subsidiary principle: The initial ideas concerning the sustainable development strategy should be developed by the project developers themselves, inside the company or organization using the SMA. During so-called *informal consultations*, the elements of the SMA can be refined together with the key stakeholders at the local/regional level one by one, the DNA and/or a consultant. In addition, survey results among the affected population can be considered (e.g. done in Peru). Based on these new insights and systematization, the project developer can strengthen the initial concept, adapt it to the verified needs of the stakeholders, and balance diverse interests. As a next step, the strategy should be presented during the official stakeholder consultation in front of a large public for further adjustments and refinements. The final, consolidated strategy is then presented to the DNA for approval. The SMA provides the DNA with a coherent set of elements, which is transparent and helps the DNA to judge upon the quality of the sustainable development strategy presented. Once approved by the host country, the quality control should move on to the international level: The validation by the DOE should consider sustainable development aspects because they are to be included in the monitoring protocol for transparency. This information would then be published on the CDM UNFCCC website as it is the practice for the current documentation. This approach would respect the first the locals and the sovereignty of the host country as regards the decision on sustainability in its borders, but it would not completely exclude the international community from the discussion. Although the responsible and sovereign entity is the DNA of the host country, feedback by international experts on the information provided (or lacking) in the PDDs should be promoted for the sake of sustainable development.

On the one hand, it is often argued that the advancement and increased application of technology through international cooperation virtually automatically leads to sustainable development as in the long run the general living standard improves worldwide. However, this conviction neither reflects the planning horizon of today's population in developing countries nor addresses the distribution of equity. Developing countries argue that the CDM is only beneficial to them if it leads to sustainable development. This opinion expresses that climate change is not yet perceived as pressing for the population in developing countries as the many other development challenges are.

Yet, it might not be the most effective solution to pursue both goals – emission reductions and sustainable development – with one mechanism. In particular, when looking more closely at the notion of sustainable development, it becomes apparent that it is not a single goal but a concept composed of a vast set of sub-goals. The CDM should not be considered as a remedy for all these problems simultaneously.

Nevertheless, without certain minimal standards, CDM project activities may even increase inequity, which should be prevented. The requirement of an approval letter signed by the host DNA with explicit reference to sustainable development is intended to ensure that the host countries are those who determine what should

happen inside their boundaries. However, as benevolent dictators are rarely found, the contribution to sustainable development is very likely to stay lip serve as long as the related information is kept as vague as it is currently the case for regular CDM project activities.

Therefore, the recommendation of this study is to set local minimal standards – e.g. the compliance with legislation and political programs – and to require all project developers to come up with innovative ideas how they can further contribute to sustainable development. These sustainability strategies should be developed and presented in a structured and evaluable way. The SMA is a tool which can be used for this purpose.

## Figures

Figure 1: Additionality of emission reductions to guarantee the integrity of the Kyoto Protocol.....	14
Figure 2 Evaluation design of the CDM.....	17
Figure 3: Three dimensions of sustainable development.....	25
Figure 4: The optimal path in the present value maximizing model.....	26
Figure 5: Illustration of the ‘optimal’ path of consumption in the model of Dasgupta and Heal.....	27
Figure 6: The stylized Environmental Kuznets Curve.....	30
Figure 7: The stylized AMOEBA graph.....	35
Figure 8: Assumption Rating Chart.....	56
Figure 9: Shaping the definition of sustainable development in the CDM context.....	67
Figure 10: Identification of priority areas of sustainable development.....	73
Figure 11: Stylized pathway of sustainable development and example.....	75
Figure 12: Group formation.....	77
Figure 13: Assumption rating.....	77
Figure 14: Research Methods.....	80
Figure 15: Map of Peru.....	97
Figure 16: Information provided in the PDD.....	113
Figure 17: Reconstruction of missing information.....	114
Figure 18: Case A pathway of sustainable development.....	119
Figure 19: Case B pathway of sustainable development.....	131
Figure 20: Schematic illustration of involved departments in case C.....	137
Figure 21: Case C pathway of sustainable development.....	145
Figure 22: DNAs notified to the UNFCCC on 11 January 2007.....	179
Figure 23: Regions of the DNAs notified to the UNFCCC on 11 January 2007.....	179
Figure 24: Number of DNAs expressing their interest in taking part in the survey.....	180
Figure 25: Number of DNAs who finally participated in the survey.....	180
Figure 26: Participation of Annex I and non-Annex I DNAs in the survey....	180
Figure 27: Participation of DNAs in the survey along regional groups.....	180
Figure 28: Number of DNAs disposing of a website.....	181
Figure 29: Number of DNAs disposing of a website and providing all important information online.....	181
Figure 30: Comparison of the CDM experience of the DNAs who participated in the survey and those who did not participate.....	182
Figure 31: Number of DNAs stating that they used an approach to evaluate the contribution to sustainable development of CDM proposals.....	183
Figure 32: Types of approaches used (answers per category) as stated by the interviewees.....	183
Figure 33: Interest in a type of approach by DNAs not yet disposing of procedures (number of answers).....	184
Figure 34: Approaches applied by the DNAs (adjusted based on the explanation provided by the interviewees).....	185
Figure 35: Obligatory and voluntary use of applied approaches (50/50 = both) as stated by the interviewees.....	185
Figure 36: Personal experience of the interviewees with the element of the SMA.....	187
Figure 37: Current use of each of the elements of the SMA by the DNAs to	

evaluate CDM project activities.....	188
Figure 38: Usefulness of the elements of the SMA as valued by the interviewees.....	189
Figure 39: Usefulness of the elements of the SMA per actor as valued by the interviewees.....	190
Figure 40: Potential recommendation and use of the SMA as stated by the interviewees.....	193

## Tables

Table 1: Conceptual and operational definitions of variables	87
Table 2: Current CDM project portfolio.....	107
Table 3: Case A stakeholder Analysis (PRO position).....	122
Table 4: Case A stakeholder Analysis (CONTRA position).....	123
Table 5: Case A assumptions about the behaviour of stakeholders (PRO).....	124
Table 6: Case A assumptions about the behaviour of stakeholders (CON-TRA).....	125
Table 7: Case B stakeholder Analysis.....	133
Table 8: Case B assumptions about the behaviour of stakeholders (PRO).....	134
Table 9: Case B assumptions about the behaviour of stakeholders (CON-TRA).....	135
Table 10: Case C stakeholder Analysis .....	146
Table 11: Case C assumptions about the behaviour of stakeholders (PRO)...	148
Table 12: Case C assumptions about the behaviour of stakeholders (CON-TRA).....	148
Table 13: Formal characteristics.....	151
Table 14: Knowledge and experience.....	152
Table 15: Goals .....	153
Table 16: Operationalization.....	154
Table 17: Existing concepts.....	155
Table 18: Team for sustainable development.....	156
Table 19: Stakeholder participation.....	157
Table 20: Potential outcomes.....	158
Table 21: Typology.....	158
Table 22: Policy analysis.....	160
Table 23: Stakeholder analysis.....	161
Table 24: Definition of resources and inputs.....	162
Table 25: Definition of goal hierarchy.....	163
Table 26: Definition of activities.....	164
Table 27: Definition of indicators.....	165
Table 28: Discussion of underlying assumptions.....	166
Table 29: Summary of results from implementation.....	167
Table 30: Following the SD guidelines.....	176
Table 32: Relevance of the respective approaches for DNAs, project developers and others.....	186
Table 33: Usefulness of the elements of the SMA.....	189
Table 34: Usefulness of the elements of the SMA per actor.....	191
Table 35: Potential recommendation and use of the SMA as stated by the interviewees.....	194
Table 36: Experience and judgment.....	195

## Abbreviations

AA	AccountAbility
AFR	Africa
ANP	Area Natural Protegida
ASP	Asia-Pacific
BAU	Business-As-Usual
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit = Federal Ministry for Environment, Nature Conservancy and Reactor Safety
BSC	Balanced Scorecard
CBA	Cost-benefit analysis
CBD	Convention on Biological Diversity
CC	Corporate Citizenship
CCB	Climate, Community and Biodiversity
CCBA	Climate, Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CEPAA	Council on Economic Priorities Accreditation Agency
CER(s)	Certified Emission Reduction(s)
CERES	Coalition for Environmentally Responsible Economics
CERUPT	Certified Emission Reduction Unit Procurement Tender
CIA	Central Intelligence Agency
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> eq	CO <sub>2</sub> equivalent
COES	Comité de Operación Económica del Sistema Interconectado National = Committee of Economic Operation of the National Interconnected System
CONAM	Consejo Nacional del Ambiente = National Environment Council
COP	Conference of the Parties
COP/MOP	Conference of the Parties serving as the Meeting of the Parties
COSY	Company-oriented Sustainability
CPR(s)	Common property right(s)
CSR	Corporate Social Responsibility
DC(s)	Developing Country(-ies)
DD	Development Dividend
DGA	Dirección General de Aguas = General Water Management
DGAEE	Dirección General de Asuntos Ambientales Energéticos = General Management of Environmental Energetic Topics
DNA	Designated National Authority
DOE(s)	Designated Operational Entity
EASY-ECO	Evaluation of Sustainability: European Conferences and Training Courses
EB	(CDM) Executive Board
EE	Eastern Europe
EIA	Environmental Impact Assessment
EIT(s)	Economy(/ies) In Transition
EMAS	Eco-Management and Audit Scheme
ENGO(s)	Environmental NGO(s)
ER(s)	Emission Reduction(s)
EKC	Environmental Kuznets Curve

ET	Emission Trading
FONAFE	Fondo Nacional de Financiamiento de la Actividad Empresarial del Estado = National Financing Fund of the State's Business Activity
FONAM	Fondo Nacional del Ambiente = National Environment Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG(s)	Greenhouse Gas(es)
GMT	Greenwich Mean Time
GNP	Gross National Product
GRI	Global Reporting Initiative
GWh	Gigawatthour
HFCs	Hydro Fluoro Carbons
IISD	International Institute of Sustainable Development
IMS	Integrated Management Systems
INC	Instituto Nacional de Cultura = National Institute of Culture
INADE	Instituto Nacional de Desarrollo = National Development Institute
INEI	Instituto Nacional de Estadística e Informática = National Institute for Statistics and Informatics
INRENA	Instituto Nacional de Recursos Naturales = National Institute for Natural Resources
IPCC	Intergovernmental Panel on Climate Change
ISEA	Institute for Social and Ethical Accountability
ISO	International Organization for Standardization
JI	Joint Implementation
LAC	Latin-America and the Caribbean
LDC(s)	Least Developed Country (-ies)
LIMPUC	Empresa Municipal de Limpieza Publica del Cusco
LUCF	Land-use change and forestry
LULUCF	Land-use, land-use change and forestry
MATA	Multi-Attributive Assessment
MAUT	Multiple Attribute Utility Theory
MCA	Multi-criteria analysis
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MDGs	Millennium Development Goals
MDL	Mecanismo del Desarrollo Limpio = Clean Development Mechanism
MEF	Ministerio de Economía y Finanzas = Ministry of Economy and Finances
MINAG	Ministerio de Agricultura = Ministry of Agriculture
MICTI	Ministerio de Industria, Comercio, Turismo e Integración = Ministry of Industry, Commerce, Tourism and Integration
MINCETUR	Ministerio de Comercio Exterior y Turismo = Ministry of Foreign Commerce and Tourism
MINEM	Ministerio de Energía y Minas = Ministry of Energy and Mines
MMSD	Mining, Minerals and Sustainable Development Project
N <sub>2</sub> O	Nitrogen dioxide
NDP(s)	National Development Plan(s)

NGO	Non-Governmental Organization
NIE	New Institutional Economics
NSS	National Strategy Study
NSSD	National Strategy(-ies) for Sustainable Development
ODA	Official Development Assistance
OHSAS	Occupational Health and Safety Assessment Series
ONERN	Oficina Nacional de Evaluación de Recursos Naturales = National Office for Evaluation of Natural Resources
OSINERG	Organismo Supervisor de la Inversion en Energia = Super- visory Body for Energy Investments
PAMA	Programa de Adecuación y Manejo Ambiental = Programme for Environmental Adaptation and Handling
PROMETHEE	Preference Ranking Organization Methods for Enrichment Evaluations
PCF	Prototype Carbon Fund
PD(s)	Project developer(s)
PDCA	Plan-Do-Check-Act
PDD	Project Design Document
PNA	Política Nacional Ambiental = National Environmental Policy
PP(s)	Project Participant(s)
PRSP(s)	Poverty Reduction Strategy Paper(s)
RBA	Risk-benefit analysis
RBV	Resource-based view
SA	Social Accountability
SD	Sustainable development
SBS	Sustainable Balanced Scorecard
SBSC	Sustainability Balanced Scorecard
SDMP	Sustainable Development Monitoring Plan
SEIN	Sistema de Electricidad Interconectado = Interconnected Electricity System
SIDS	Small island developing states
SMA	Sustainability Management Approach
SMART	Specific, measurable, action-oriented, realistic, timed
SNIP	Sistema Nacional de Inversión Pública = National System of Public Investment
SSc	Small-Scale
TBL	Triple bottom line
TICPI	Transparency International Corruption Perception Index
TQM	Total Quality Management
UN	United Nations
UNDP	United Nations Development Programme
UNCED	UN Conference on Environment and Development
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VOC(s)	Volatile Organic Compound(s)
WCED	World Commission on Environment and Development
WE	Western Europe
WSSD	World Summit on Social Development
WTA	Willingness to accept
WTP	Willingness to pay

WWF World Wildlife Fund

Yr. Year

## References

- AA1000 (1999). AccountAbility 1000 (AA1000) framework – Standards, guidelines and professional qualification, Exposure draft – November 1999. Retrieved 11 January 2006 from <http://www.accountability21.net/aa1000/default.asp?pageid=286#overview>.
- Aarhus Convention (1998). Convention on access to information, public participation in decision-making and access to justice in environmental matters. Aarhus, Denmark. UNECE.
- Anagnostopoulos, K., et al. (2004). The impact of clean development mechanism in achieving sustainable development. *International Journal of Environment and Pollution*. Inderscience Publishers **21**(1), 1-23.
- Anderson, A. A. (2005). The Community Builder's Approach to Theory of Change – a practical guide to theory development. New York. The Aspen Institute Roundtable on Community Change.
- Armas, A., et al. (2001). De metas monetarias a metas de inflación en una economía con dolarización parcial: el caso peruano. *Revista Estudios Económicos*. Lima. BCRP(7), 25-73.
- Arnold, W., et al. (2001a). Grundlängen und Bausteine einer Sustainable Balanced Scorecard (SBS) – Überlegungen zur Entwicklung einer SBS für mittelständische Unternehmen. Werkstattreihe Betriebliche Umweltpolitik – Band 17. Universität Kassel.
- Arnold, W., et al. (2001b). Vorüberlegungen zur Entwicklung einer Sustainable Balanced Scorecard (SBS) für KMU. *UmweltWirtschaftsForum*. **9**(4), 74-79.
- Austin, D. and Faeth, P. (2000). Financing Sustainable Development with the Clean Development Mechanism. Washington, DC. World Resource Institute.
- Austin, D., et al. (1999). How much sustainable development can we expect from the Clean Development Mechanism? Climate Notes. Washington, DC. World Resources Institute.
- B&SD. (no date). SA8000: Management der internen sozialen Verantwortung von Unternehmen. B&SD – business meets social development. Retrieved 12 January 2006 from [http://www.bsd-net.com/docs/handbooksa8000\\_d.pdf](http://www.bsd-net.com/docs/handbooksa8000_d.pdf).
- Banuri, T. and Gupta, S. (2000). The Clean Development Mechanism and sustainable development: An economic analysis. Implementation of the Kyoto Protocol: Opportunities and pitfalls for developing countries. Manila, G. P., Asian Development Bank, 73-101.
- Barbier, E. B. (1997). Introduction to the Environmental Kuznets Curve. *Environment and Development Economics*. **2**(4), 369-381.
- Barney, J. B. (1986). Strategic factor markets: Expectations, luck and business strategy. *Management Science*. **32**(10), 1231-1241.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*. **17**(1), 99-120.
- Bassen, A., et al. (2005). Corporate Social Responsibility. *Zeitschrift für Wirtschafts- und Unternehmensethik (zfwu)*. **6**(2), 231-236.
- Beg, N., et al. (2002). Linkages between climate change and sustainable development. *Climate Policy*. (2), 129-144.

- Begg, K., et al. (2003). Assessment of sustainability benefits from small-scale community projects. Encouraging CDM energy project to aid poverty alleviation – Attachment 3.
- Bennett, C. F. (1975). Up the hierarchy. *Journal of Extension*. **13**(2), 7-12.
- Beschorner, T. (2005). Schillernde Begriffe und ihre Deutung. *Ökologisches Wirtschaften*. München. oekom verlag(3), 40-42.
- Bieker, T. and Dyllick, T. (2006). Nachhaltiges Wirtschaften aus managementorientierter Sicht. Berufliche Bildung für nachhaltiges Wirtschaften. Tiemeyer, E. and Wilbers, K. Bielefeld. Bertelsmann Verlag, 87-106.
- BMU, et al. (2007). Nachhaltigkeitsmanagement in Unternehmen. Von der Idee zur Praxis: Managementansätze zur Umsetzung von Corporate Social Responsibility und Corporate Sustainability. Berlin/Lüneburg. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. econsense & Centre for Sustainability Management.
- Bortz, J. (2005). Statistik für Human- und Sozialwissenschaftler. 6. Heidelberg. Springer.
- Bowen, H. (1953). Social responsibilities of the businessman. 1st ed. New York. Harper.
- Bradburn, N., et al. (2004). Asking Questions: the definite guide to questionnaire design – for market research, political polls, and social and health questionnaires. 1rev. San Francisco. Wiley.
- Brans, J.-P., et al. (1986). How to select and how to rank projects. The PROMETHEE method. *European Journal of Operational Research*. **24**(2), 228-238.
- Brown, K., et al. (2004). How do CDM projects contribute to sustainable development? Tyndall Center Technical Report 16. Tyndall Center for Climate Change Research.
- Brown, K. and Corbera, E. (2003a). Exploring equity and sustainable development in the new carbon economy. *Climate Policy*. (3S1), S41-S56.
- Brown, K. and Corbera, E. (2003b). A multi-criteria assessment framework for carbon-mitigation projects: Putting "development" in the centre of decision-making. Tyndall Centre Working Paper 29. Tyndall Center for Climate Change Research.
- Burian, M. (2006). The Clean Development Mechanism, sustainable development and its assessment. HWWA-Report 264. Hamburg. Hamburgisches Welt-Wirtschafts-Archiv (HWWA).
- Burns, R. B. (1994). Introduction to Research Methods. 2. Melbourne. Longman Cheshire.
- Burritt, R. L., et al. (2003). Towards a comprehensive framework for environmental management accounting – links between business actors and environmental management accounting tools. PAIB Articles of Merit Award Program for Distinguished Contribution to Management Accounting. New York. Professional Accountants in Business Committee (PAIB) of the International Federation of Accountants (IFAC), 93-109.
- Burschel, C., et al. (2003). Nachhaltige Entwicklung und ökonomische Theorie - Eine Skizze der Anschlussmöglichkeiten und Grenzen. *UmweltWirtschaftsForum*. Heidelberg. Springer. **11**(3), 84-91.
- Carson, R. T., et al. (1993). Introducing the issues. *Choices*. **8**(2), 5-8.
- Cass, D. (1966). Optimum Growth in an Aggregate Model of Capital Accumulation: A Turnpike Theorem. *Econometrica*. **34**(4), 833-850.

- CCBA. (2005). Climate, Community and Biodiversity Project Design Standards. CCBA1st edition. Retrieved 04 April 2007 from <http://www.climate-standards.org>.
- Chambers, R. and Mayoux, L. (2004). Reversing the Paradigm: Quantification and Participatory Methods. Retrieved 28 March 2007 from <http://www.enterprise-impact.org.uk/pdf/Chambers-MayouxUpdate.pdf>.
- Chen, H.-T. (1990). Theory-driven evaluations. Sage Publications, Inc., 328.
- Chen, H.-T. (2005). Practical Program Evaluation: Assessing and improving Planning, Implementation, and Effectiveness. Thousand Oaks, Sage Publications, Inc., 292.
- Christmann, P. and Taylor, G. (2001). Globalization and the environment: Determinants of firm self-regulation in China. *Journal of International Business Studies*. Washington. **32**(3), 439-458.
- CIA (2007). The World Factbook. Potomac Books.
- Cigarán, M. P. and Iturregui, P. (2004). Institutional strategy to promote the Clean Development Mechanism in Peru. The UNDP project CD4CDM. Roskilde, Denmark. UNEP Risoe Centre on Energy, Climate and Sustainable Development.
- Coase, R. H. (1937). The Nature of the Firm. *Economica*. **4**(16), 386-405.
- Coase, R. H. (1991). The Institutional Structure of Production – Nobel Prize Lecture. Stockholm.
- Cohen, M. A., et al. (1995). Environmental and Financial Performance: Are They Related? Washington. Investor Responsibility Research Center.
- Cohen, S., et al. (1998). Climate change and sustainable development: towards dialogue. *Global Environmental Change*. **8**(4), 341-371.
- Coleman, J. (1990). Foundations of Social Theory. Cambridge MA. The Belknap Press of Harvard University Press.
- Collis, D. J. and Montgomery, C. A. (1995). Competing on resources: Strategy in the 1990s. *Harvard Business Review*. **73**(4), 118-128.
- CONAM (2001). Comunicación Nacional del Peru a la Convención de Naciones Unidas sobre Cambio Climático – Primera Comunicación, Consejo Nacional del Ambiente, 35-120.
- CONAM (2006). Interview with two representatives of the Peruvian Designated National Authority (DNA). Consejo Nacional del Ambiente (CONAM).
- Cook, T. D. and Campbell, D. T. (1979). Quasi-Experimentation. Design and Analysis Issues for Field Settings. Chicago. Rand McNally.
- Cooper, C. D. (2001). Not just a numbers thing: tactics for improving reliability and validity in qualitative research. *Research Methods Forum*. **6**. Retrieved 17 April 2007 from <http://division.aonline.org/rm/2001forum.html>.
- Cosbey, A., et al. (2006). Making Development Work in the CDM: Phase II of the Development Dividend Project. Winnipeg, Manitoba. IISD.
- Cosbey, A., et al. (2005). Realizing the development dividend: making the CDM work for developing countries. Phase 1 Report. International Institute for Sustainable Development (IISD).
- Crawford, D. (2005). Managing and reporting sustainability. *CMA Management*. Hamilton – Ontario. **78**(9), 20-26.
- Cuánto SA (2005). Perú en números. Anuario estadístico. Lima.
- Daly, H. E. (1990). Toward Some Operational Principles of Sustainable Development. *Ecological Economics*. **2**(1), 1-6.
- Dasgupta, P. and Serageldin, I. (1999). Social Capital: A Multifaceted Perspective. Washington, DC. World Bank Publications.

- Dasgupta, P. S. and Heal, G. M. (1974). The Optimal Depletion of Exhaustible Resources. *Review of Economic Studies*, Symposium on the Economics of Exhaustible Resources. **41**, 3-28.
- Davidson, O., et al. (2003). The development and climate nexus: the case of sub-Saharan Africa. *Climate Policy*. **3S1**, S97-S113.
- den Heyer, M. (2002). The temporal logic model concept. *Canadian Journal of Program Evaluation*. **17**(2), 27-47.
- Desvousges, W. H., et al. (1993). Contingent valuation: the wrong tool to measure passive-use losses. *Choices*. **8**(2), 9-11.
- Deutscher, I. (1977). Toward avoiding the Goal Trap in Evaluation Research. *Readings in Evaluation Research – 2<sup>nd</sup> edition*. Caro, F.C. New York. Russell Sage.
- Diekmann, A., Ed. (2007). *Empirische Sozialforschung. Grundlagen, Methoden, Anwendungen*. rowohlt's enzyklopädie. Reinbek bei Hamburg. Rowohlt Taschenbuch Verlag.
- Dixon, J. A. and Hufschmidt, M. M. (1986). *Economic Valuation Techniques for the Environment – A Case Study Workbook*. Baltimore, Maryland. The Johns Hopkins University Press.
- Dunphy, D. (2003). Corporate sustainability: Challenge to managerial orthodoxies. *Journal of the Australian and New Zealand Academy of Management*. **8**(2), 2-11.
- Dyllick, T. and Schaltegger, S. (2001). Nachhaltigkeitsmanagement mit einer Sustainability Balanced Scorecard. *UmweltWirtschaftsForum*. **9**(4), 68-73.
- Fichtner, K. (1998). Schritte zum nachhaltigen Unternehmen. Schritte zum nachhaltigen Unternehmen – zukunftsweisende Praxiskonzepte des Umweltmanagements. Fichtner, K. and Clausen, J. Berlin (a.o.). Springer, 3-26.
- Fichtner, W., et al. (2002). International cooperation to support climate change mitigation and sustainable development. *International Journal of Environment and Pollution*. **18**(1), 33-55.
- Flick, U., Ed. (2005). *Qualitative Sozialforschung – Eine Einführung*. rowohlt's enzyklopädie. Reinbek bei Hamburg. Rowohlt Taschenbuch Verlag.
- Foot, S. (2004a). An evaluation of the present Clean Development Mechanism (Part 1). *Environmental Law and Management*. **16**(3), 125-134.
- Foot, S. (2004b). An evaluation of the present Clean Development Mechanism (Part 2). *Environmental Law and Management*. **16**(4), 193-199.
- Freimann, J. (2001). Vom betrieblichen Umweltmanagement zur nachhaltigen Unternehmensführung. *Betriebliches Umweltmanagement. Grundlagen – Methoden – Praxisbeispiele*. Loose-leaf collection. Lutz, U., Döttinger, K. and Roth, K.
- Freimann, J. (2004). Versuche zur Instrumentierung einer nachhaltigen Entwicklung. Werkstattreihe "Betriebliche Umweltpolitik" – Band 23. Kassel, Univ. Gesamthochsch., Forschungsgruppe Betriebliche Umweltpolitik.
- Friedman, M. (1970). The Social Responsibility of Business is to Increase Its Profits. *The New York Times Magazine*. The New York Times Company (13 September 1970).
- Fritsch, M., et al. (2003). *Marktversagen und Wirtschaftspolitik – Mikroökonomische Grundlagen staatlichen Handelns*. 5. München. Verlag Franz Vahlen.
- Funtowicz, S. O. and Ravetz, J. R. (1991). A New Scientific Methodology for Global Environmental Issues. *Ecological Economics. The Science and Management of Sustainability*. Costanza, R. New York. Columbia University Press, 137-152.

- G77 and China (1999). Statement on behalf of the Group of 77 and China by Ms. Alison Drayton of the delegation of Guyana, at the opening of the 10<sup>th</sup> session of the subsidiary bodies of the United Nations Framework Convention on Climate Change. Bonn, 1 June 1999.
- George, C. (2001). Sustainability appraisal for sustainable development: integrating everything from jobs to climate change. *Impact Assessment and Project Appraisal*. Surrey, UK. Beech Tree Publishing. **19**(2), 95-106.
- Georgescu-Roegen, N. (1971). *The Entropy Law and the Economic Process*. Cambridge, MA. Harvard University Press.
- Giampietro, M. (2003). Integrated Assessment of Agroecosystems and Multi-Criteria Analysis: Basic Definitions and Challenges – Chapter 5. Multi-Scale Integrated Analysis of Agroecosystems. CRC Press.
- Giampietro, M., et al. (2006). Integrated assessment and energy analysis: Quality assurance in multi-criteria analysis of sustainability. *Energy*. **31**(1), 59-86.
- Gomiero, T. and Giampietro, M. (2005). Graphic tools for data representation in integrated analysis of farming systems. *International Journal of Global Environmental Issues*. **5**(3/4), 264-301.
- Grossman, G. M. and Krueger, A. B. (1991). Environmental Impacts of a North American Free Trade Agreement. Working Paper No. 3914. Cambridge, MA, National Bureau of Economic Research.
- Guba, E. G. and Lincoln, Y. S. (1989). *Fourth Generation Evaluation*. Newbury Park, London, New Delhi. Sage.
- Gundimeda, H. (2004). How 'sustainable' is the 'sustainable development objective' of CDM in developing countries like India? *Forest Policy and Economics*. (6), 329-343.
- Hamschmidt, J. (2003). From EMS to SMS? – Developing a Sustainability Management Systems Approach. Sustainability Management in Action (SMIA) Conference 2003. Geneva.
- Hardi, P. and Zdan, T., Eds. (1997). *Assessing Sustainable Development: Principles in Practice*. Winnipeg, Manitoba. IISD.
- Hart, S. L. (1995). The natural-resource-based view of the firm. *Academy of Management Review*. **20**(4), 986-1014.
- Hartwick, J. M. (1977). Intergenerational Equity and the Investing of Rents from Exhaustible Resources. *American Economic Review*. **67**(5), 972-974.
- Hartwick, J. M. (1978). Investing Returns from Depleting Renewable Resource Stocks and Intergenerational Equity. *Economic Letters*. **1**(1), 85-88.
- Hinings, C. R. (1997). Reflections on processual research. *Scandinavian Journal of Management*. **13**(4), 439-503.
- Hodge, R. A. and Hardi, P. (1997). The Need for Guidelines: The Rationale Underlying the Bellagio Principles for Assessment. *Assessing Sustainable Development: Principles in Practice*. Hardi, P. and Zdan, T. Winnipeg, Manitoba. IISD, 7-20.
- Hoffman, A. J., et al. (1999). A mixed-motive perspective on the economics versus environment debate. *The American Behavioral Scientist*. Thousand Oaks. **42**(8), 1254-1276.
- Holdridge, L. R. (1947). Determination of world plant formations from simple climatic data. *Science*. **105**(2727), 367-368.
- Holme, R. and Watts, P. (2000). *Corporate Social Responsibility. Making good business sense*. Geneva. WBCSD.
- Hopwood, B., et al. (2005). Sustainable Development: Mapping Different Approaches. *Sustainable Development*. Wiley InterScience. (13), 38-52.

- Huber, J. (1995). Sustainable development through sufficiency, efficiency, and consistency. *Sustainability in Natural and Social Science Perspectives*. Fritz, P., Huber, J. and Levi, H. Stuttgart. Hirzel, 31-46.
- Hueting, R. (1990). The Brundtland report: A matter of conflicting goals. *Ecological Economics*. Amsterdam. Elsevier Science Publishers B.V. **2**, 109-117.
- Humphrey, J. (2004). The Clean Development Mechanism: How to increase benefits for developing countries? *IDS bulletin*. Brighton. Institute of Development Studies. **35**(3), 84-89.
- Huq, S. (2002). Applying sustainable development criteria to CDM projects: PCF experience. PCFplus Report 10. Washington, DC.
- ILO. (2005). Website. Retrieved 26 April 2007 from <http://laborsta.ilo.org/cgi-bin/brokerv8.exe>.
- INEI (2003). Estado de la población peruana, 2003 – adolescencia y juventud. Lima. Instituto Nacional de Estadística e Informática.
- INEI (2005a). Compendio Estadístico 2005. Lima. Instituto Nacional de Estadística e Informática.
- INEI. (2005b). Website. Instituto Nacional de Estadística e Informática. Retrieved 26 April 2007 from <http://www.inei.gob.pe>.
- INEI. (2006). Website. Instituto Nacional de Estadística e Informática. Retrieved 26 April 2007 from <http://www.inei.gob.pe>.
- INEI. (2007). Website. Instituto Nacional de Estadística e Informática. Retrieved 26 April 2007 from <http://www.inei.gob.pe>.
- INRENA (1997). Estudio Nacional de la Diversidad Biológica. Lima. Instituto Nacional de Recursos Naturales. **I-IV**.
- IPCC (2001). Technical Summary – Climate Change 2001: Mitigation – A Report of Working Group III of the Intergovernmental Panel on Climate Change. Cambridge, UK. Cambridge University Press.
- IPCC. (2007). Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change – Technical Summary. Retrieved 26 August 2007 from [http://www.mnp.nl/ipcc/pages\\_media/FAR4docs/chapters/TS\\_WGIII\\_220607.pdf](http://www.mnp.nl/ipcc/pages_media/FAR4docs/chapters/TS_WGIII_220607.pdf).
- Jeffreys, I. (2004). The Use of Compensatory and Non-compensatory Multi-Criteria Analysis for Small-scale Forestry. *Small-scale Forest Economics, Management and Policy*. **3**(1), 99-117.
- Kaplan, R. S. and Norton, D. P. (1992). The balanced scorecard: measures that drive performance. *Harvard Business Review*. **70**(1), 72-79.
- Kaplan, R. S. and Norton, D. P. (2000). Having Trouble with Your Strategy? Then Map it. *Harvard Business Review*. **78**(5), 167-176.
- Kaplan, R. S. and Norton, D. P. (2001). Die strategiefokussierte Organisation – Führen mit der Balanced Scorecard. Stuttgart. Schäffer-Poeschel.
- Keeney, R. L. and Raiffa, H. (1976). Decisions with Multiple Objectives: Preferences and Value Tradeoffs. New York. John Wiley & Sons.
- Kim, J. A. (2003). Sustainable development and the CDM: A South African case study. Tyndall Center Working Paper No. 42. Tyndall Center for Climate Change Research.
- Knoflacher, M., et al. (2003). Assessment of Sustainability – Can it be standardised? EASY-ECO-2 Evaluation of Sustainability – European Conferences. Vienna.
- Kohlbacher, F. (2005). The Use of Qualitative Content Analysis in Case Study Research [Article 21; 89 paragraphs]. *FQS Forum Qualitative Sozialfor-*

- schung / Forum: Qualitative Social Research [On-line Journal]. 7(1). December 2005.*
- Kolshus, H. H., et al. (2001). Can the Clean Development Mechanism attain both cost-effectiveness and sustainable development objectives? CICERO Working Paper 2001:8. Oslo, Norway. Center for International Climate and Environmental Research.
- Koopmans, T. C. (1965). On the Concept of Optimal Economic Growth. The Economic Approach to Development Planning. North Holland, Amsterdam. Pontificia Academia. Scientiarum.
- Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review.* **49**(1), 1-28.
- Langer, M. E. and Schön, A. (2002). An integrated referential framework for sustainable development. EASY-ECO-1 Evaluation of Sustainability – European Conferences. Vienna.
- Lee, K. (2000). Global sustainable development: its intellectual and historical roots. Global sustainable development in the 21st century. Lee, K., Holland, A. and McNeill, D. Edinburgh. Edinburgh University Press, 31-47.
- Leeuw, F. L. (2003). Reconstructing Program Theories: Methods Available and Problems to be Solved. *American Journal of Evaluation.* American Evaluation Association. **24**(1), 5-20.
- Lin, C. Y. (2002). An investigation of the process of IS/IT investment evaluation and benefits realisation in large Australian organisations. School for Information Systems. Curtin University of Technology.
- Lumley, S. and Armstrong, P. (2004). Some of the Nineteenth Century Origins of the Sustainability Concept. *Environment, Development and Sustainability.* Springer. **6**(3), 367-378.
- MacDonald, C. and Norman, W. (2004). What's Wrong With the "Triple Bottom Line"? 6 degrees.ca green marketing newsletter – July 2004. Retrieved 18 July 2006 from [http://www.6degrees.ca/newsletter\\_jul04.html#think](http://www.6degrees.ca/newsletter_jul04.html#think).
- Malhotra, Y. (1996). Organizational Learning and Learning Organizations: An Overview. Retrieved 18 July 2006 from <http://www.kmbook.com/orglrng.htm>.
- Malinvaud, E. (1965). Croissances optimales dans un modèle macroéconomique. The Econometric Approach for Development Planning. North Holland, Amsterdam. Pontificia Academia. Scientiarum.
- Markandya, A. and Halsnaes, K. (2002). Climate Change and sustainable development: prospects for developing countries. London. Earthscan.
- Markandya, A., et al. (2002a). A conceptual framework for analysing climate change in the context of sustainable development. Climate change and sustainable development – prospects for developing countries. Markandya, A. and Halsnaes, K., Earthscan Publications Ltd., 15-47.
- Markandya, A., et al. (2002b). Environmental Economics for Sustainable Growth – A Handbook for Practitioners. Cheltenham, UK; Northampton, MA, USA. Edward Elgar Publishing.
- Mason, R. O. and Mitroff, I. I. (1981). Challenging strategic planning assumptions – theory, cases and techniques. New York. Wiley, 315.
- Mayring, P. (2003). Qualitative Inhaltsanalyse – Grundlagen und Techniken. 8. Weinheim and Basel. Beltz Verlag.
- MCPFE. (1993). Helsinki Ministerial Conference in Resolution H1: General Guidelines for the Sustainable Management of Forests in Europe. Retrieved 8 May 2007 from [http://www.mcpfe.org/copy\\_of\\_rs/resolution\\_h1.pdf](http://www.mcpfe.org/copy_of_rs/resolution_h1.pdf).

- Meran, G. (1996). Nachhaltige Entwicklung in den Wirtschaftswissenschaften. Nachhaltige Entwicklung – Eine Herausforderung für die Forschung? Hübler, K.-H. and Weiland, U. Berlin. Verlag für Wissenschaft und Forschung.
- Mertens, D. M. (1998). Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches. Thousand Oaks, CA. Sage.
- Mertens, D. M. (2004). Institutionalizing Evaluation in the United States of America. Evaluationsforschung: Grundlagen und ausgewählte Forschungsfelder. Stockmann, R. Opladen, Leske & Bulrich, 45-60.
- Michaelis, L. (2003). Sustainable consumption and greenhouse gas mitigation. *Climate Policy*. **3S1**, S135-S146.
- Michaelowa, A. and Stronzik, M. (2002). Transaction costs of the Kyoto Mechanisms. HWWA discussion paper 175. Hamburg. Hamburg Institute of International Economics.
- MINCETUR. (2006). Estadísticas de Comercio Exterior del Perú Exportaciones. Ministerio de Comercio Exterior y Turismo. Retrieved 30 April 2007 from <http://www.mincetur.gob.pe/>.
- MINEM. (2000). Reference Plan for Mining 2000-2009. Ministry of Energy and Mines. Retrieved 20 January 2007 from <http://www.minem.gob.pe/archivos/dgm/publicaciones/public08/archivo.pdf>.
- MINEM. (2005). Balance Nacional de Energía 2005. República del Perú – Ministerio de Energía y Minas – Oficina de Planeamiento y Políticas Sectoriales. Retrieved 8 May 2007 from <http://www.minem.gob.pe/archivos/dgh/publicaciones/oterg/balance2005.pdf>.
- MMSD (2002). Breaking New Ground – The Report of the Mining, Minerals and Sustainable Development Project. London. Earthscan Publications.
- Müller-Pelzer, F. (2004). The Clean Development Mechanism – A Comparative Analysis of Chosen Methodologies for Methane Recovery and Electricity Generation. HWWA Report 244. Hamburg. Hamburgisches Welt-Wirtschafts-Archiv.
- Müller-Pelzer, F. (2008). Current evaluation practice of the Clean Development Mechanism. Economics and Management of Climate Change: Risks, Mitigation and Adaptation. Hansjürgens, B. and Antes, R. Berlin et al. Springer, 157-174.
- Munda, G. (1995). Multicriteria Evaluation in a Fuzzy Environment: Theory and Applications in Ecological Economics. Heidelberg. Physica-Verlag.
- Munda, G. (2004). Social multi-criteria evaluation: Methodological foundations and operational consequences. *European Journal of Operational Research*. **158**(3), 662-677.
- Neuman, W. L. (2006). Social Research Methods: Quantitative and Qualitative Approaches. 6. Boston, Mass (a. o.). Pearson.
- Norman, W. and MacDonald, C. (2004). Getting to the Bottom of "Triple Bottom Line". *Business Ethics Quarterly*. **14**(2).
- North, D. C. (1990). Institutions, Institutional Change and Economic Performance. New York. Cambridge University Press.
- Olhoff, A. (2002). Assessing social capital aspects of climate change projects. Climate change and sustainable development – prospects for developing countries. Markandya, A. and Halsnaes, K., Earthscan Publications Ltd. 73-128.
- Olson, M. (1982). The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities. New Haven. Yale University Press.

- Omann, I. (2004). Multi-criteria Decision Aid as an Approach for Sustainable Development Analysis and Implementation. Sozial- und Wirtschaftswissenschaften. Karl-Franzens Universität Graz.
- ONERN (1985). Los recursos naturales del Perú. Lima. Oficina Nacional de Evaluación de Recursos naturales.
- Ott, H. E. and Sachs, W. (2000). Ethical Aspects of Emission Trading. Wuppertal Papers No. 110.
- Patton, M. Q. (1987). Evaluation's Political Inherency: Practical Implications for Design and Use. The Politics of Program Theory. Palumbo, D. J. Thousand Oaks, CA. Sage, 100-145.
- Pearce, D. W. and Markandya, A. (1989). Environmental policy benefits: Monetary valuation. OECD.
- Pearson, B. (2004). Market failure – Why the Clean Development Mechanism won't promote clean development. CDMWatch.
- Porter, M. E. (1991). America's green strategy. *Scientific American*. **264**(4), 168-179.
- Porter, M. E. (1998). Competitive Strategy – Techniques for Analyzing Industries and Competitors. New York. Simon and Schuster Trade Division.
- Porter, M. E. and Esty, D. C. (1998). Industrial Ecology and Competitiveness: Strategic Implications for the Firm. *Journal of Industrial Ecology*. **2**(1), 35-43.
- Porter, M. E. and van der Linde, C. (1995). Green and competitive. Ending the stalemate. *Harvard Business Review*. **73**(5), 120-134.
- Prahalad and Hamel (1990). The Core Competence and the Corporation. *Harvard Business Review*. **68**(3), 79-91.
- ProInversión. (2006). Estadísticas de inversión Extranjera. ProInversión – Private Investment Promotion Agency. Retrieved 26 April 2007 from <http://www.proinversion.gob.pe/0/0/modulos/JER/PlantillaStandardsinHijos.aspx?ARE=0&PFL=0&JER=1537>.
- Putnam, R. D., et al. (1993). Making Democracy Work: Civic Traditions in Modern Italy. Princeton. Princeton University Press.
- Randall, A. (1993). Passive-use values and contingent valuation – valid for damage assessment. *Choices*. **8**(2), 12-15.
- Rees, W. E. (1992). Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanisation*. **4**(2), 121-130.
- Russo, M. V. and Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*. Briarcliff Manor. **40**(3), 534-559.
- Schaltegger, S. (2004). Sustainability Balanced Scorecard – Unternehmerische Steuerung von Nachhaltigkeitsaspekten. *Controlling*. München. Verlag Vahlen (08/09), 511-516.
- Schaltegger, S. and Burritt, R. (2005). Corporate sustainability – Chapter 5. The International Yearbook of Environmental and Resource Economics 2005/2006. A Survey of Current Issues. Folmer, H. and Tietenberg, T. Cheltenham. Edward Elgar, 185-222.
- Schaltegger, S., et al. (2002). Nachhaltigkeitsmanagement in Unternehmen - Konzepte und Instrumente zur nachhaltigen Unternehmensentwicklung. 1<sup>st</sup> edition. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. Center for Sustainability Management (CSM) e.V., Universität Lüneburg.
- Schaltegger, S., et al. (2003). "Werkzeuge" des unternehmerischen Nachhaltigkeitsmanagements. *UmweltWirtschaftsForum*. **11**(4), 60-65.

- Schaltegger, S. and Synnestvedt, T. (2002). The link between 'green' and economic success: environmental management as the crucial trigger between environmental and economic performance. *Journal of Environmental Management*. Elsevier Science Ltd. **65**(4), 339-346.
- Schmidheiny, S. and the BCSD (1992). *Changing Course – A Global Business Perspective on Development and the Environment*. Cambridge, MA. MIT Press.
- Schneidewind, U. (1994). Mit COSY (Company oriented Sustainability) Unternehmen zur Nachhaltigkeit führen. Diskussionsbeitrag Nr. 15. Institut für Wirtschaft und Ökologie – Universität St. Gallen.
- Schneidewind, U., et al. (1997). Instrumente zur Umsetzung von COSY (Company oriented Sustainability) in Unternehmen und Branchen. *Umwelt-WirtschaftsForum*. **5**(2), 36-45.
- Scriven, M. (1980). *The Logic of Evaluation*. California. Edgepress.
- Searcy, C., et al. (2005). Insights from practice – Designing sustainable development indicators: analysis for a case utility. *Measuring Business Excellence*. Emerald Group Publishing Limited. **9**(2), 33-41.
- Sharma, S. and Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*. **19**(8), 729-253.
- Silayan, A. (2005). Equitable distribution of CDM projects among developing countries. HWWA Report 255. Hamburg. Hamburgisches Welt-Wirtschafts-Archiv.
- Simon, H. A. (1957). *Models of Man: Social and Rational*. New York. John Wiley & Sons, 279.
- Simon, H. A. (1982). *Models of Bounded Rationality*. Cambridge, MA. MIT Press.
- Sokona, Y., et al. (2002). Climate change and sustainable development: views from the South. *Opinion – World Summit on Sustainable Development*. London. International Institute for Environmental and Development, 5.
- Solís García, K. d. P. (2006). *Implementing the Clean Development Mechanism: an integrated assessment of small energy projects in Peru*. University of Surrey. Engineering Doctorate in Environmental Technology.
- Solow, R. M. (1974). Intergenerational Equity and Renewable Resources. *Review of Economic Studies*. Symposium on the Economics of Exhaustible Resources. **41**, 29-45.
- Spangenberg, J. H. (2005). Economic sustainability of the economy: concepts and indicators. *International Journal of Sustainable Development*. **8**(1/2), 47-64.
- Stagl, S. (2004). Valuation for Sustainable Development – The Role of Multicriteria Evaluation. *Vierteljahrshefte zur Wirtschaftsforschung*. **73**(1), 53-62.
- Stake, R. E. (1983). The Case Study Method in Social Inquiry. *Evaluation Models*. Madaus, G. F., Scriven, M. and Stufflebeam, D. L. Boston. Kluwer-Nijhoff, 279-286.
- Stirling, A. (1999). *On Science and Precaution: In the Management of Technological Risk – An ESTO Project Report Prepared for the European Commission - JRC*. Seville. Institute Prospective Technological Studies.
- Stockmann, R. (2002). *Qualitätsmanagement und Evaluation – Konkurrierende oder sich ergänzende Konzepte?* Arbeitspapier 3. CEval – Centrum für Evaluation. Saarbrücken.

- Stockmann, R. (2004). Evaluation in Deutschland. Evaluationsforschung: Grundlagen und ausgewählte Forschungsfelder. Stockmann, R. Opladen. Leske & Bulrich, 13-43.
- Suchman, E. A. (1967). Evaluative research: Principles and practice in public service and social action programs. New York. Russell Sage Foundation.
- Sutter, C. (2003). Sustainability Check-Up for CDM Projects. How to assess the sustainability of international projects under the Kyoto Protocol. Wissenschaftlicher Verlag Berlin.
- ten Brink, B. J. E., et al. (1991). A quantitative method for description and assessment of ecosystems: the AMOEBA approach. *Marine Pollution Bulletin*. **23**, 265-270.
- Thielemann, U. (2001). 'Triple Bottom Line' – wirtschaftsethisch beleuchtet. Thema des Monats. Educatis – International Business School. <http://www.educatis.com>. September 2001. Retrieved 18 July 2006 from <http://www.iwe.unisg.ch/org/iwe/web.nsf/wwwPubLiteraturTyp/ED3C9E694A7FAE3FC1256AE8003345FE>.
- Thielemann, U. (2004). Akzeptanz oder Legitimität? Die Idee verdienter Reputation. CCRS Occasional Papers Series. Paper No. 05/04. Zürich.
- Thorne, S. and Raubenheimer, S. (2001). Sustainable Development (SD) appraisal of Clean Development Mechanism (CDM) projects – experiences from the SouthSouthNorth (SSN) project. Forum for Economics and Environment – First Conference Proceedings. Retrieved 27 June 2006 from <http://www.econ4env.co.za/archives/ecodivide/Theme3a.pdf>.
- TICPI (2005). Transparency International's Global Corruption Report 2005. Pluto Press.
- Toulmin, S. E. (1958). The Uses of Argument. Cambridge University Press.
- Umamaheswaran, K. and Michaelowa, A. (2006). Additionality and sustainable development issues regarding CDM projects in energy efficiency sector. HWWA discussion paper 346. Hamburg. Hamburgisches Welt-Wirtschafts-Archiv (HWWA), 43.
- UNDP (2005). Informe sobre Desarrollo Humano – Perú 2005 – Hagamos de la competitividad una oportunidad para todos. Lima. United Nations Development Programme Peru.
- UNDP (2006a). Beyond Scarcity: Power, poverty and the global water crisis. Human Development Report 2006.
- UNDP (2006b). Human Development Report 2006. United Nations Development Programme.
- UNEP (2005). Background report for a UNEP Guide to Life Cycle Management – a bridge to sustainable products. United Nations Environment Programme. Retrieved 30 March 2007 from [http://www.unep.org/pc/sustain/reports/lcini/UNEP\\_Background\\_document\\_LCM\\_2006\\_Febr.pdf](http://www.unep.org/pc/sustain/reports/lcini/UNEP_Background_document_LCM_2006_Febr.pdf).
- UNFCCC (1997). Kyoto Protocol.
- UNFCCC (2001a). Decision 17/CP.7 – Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol. 7<sup>th</sup> session of the Conference of the Parties of the UNFCCC. Marrakesh.
- UNFCCC (2001b). The Marrakesh Accords and the Marrakesh Declaration. 7<sup>th</sup> session of the Conference of the Parties of the UNFCCC. Marrakesh.
- United Way of America Task Force on Impact (1996). Measuring outcome: A practical approach. Alexandria, VA. United Way of America.
- Varian, H. R. (2004). Intermediate Microeconomics. 6. New York. W. W. Norton & Company, Inc.
- W.K. Kellogg Foundation (2004). Logic Model Development Guide.

- Walley, N. and Whitehead, B. (1994). It's not easy being green. *Harvard Business Review*. **72**(3), 46-52.
- WCED (1987). *Our Common Future*. World Commission on Environment and Development. Oxford University Press.
- Weiss, C. H. (1972). *Evaluation Research*. Englewood Cliffs. New Jersey. Prentice Hall.
- Wholey, J. (1979). *Evaluation: Promise and performance*. Washington, DC. Urban Institute Press.
- Wilbanks, T. J. (2003). Integrating climate change and sustainable development in a place-based context. *Climate Policy*. **3**(1), S147-S154.
- Williamson, O. E. (1985). *The Economic Institutions of Capitalism*. New York Free Press.
- Winter, S. G. (1971). Satisficing, Selection and the Innovating Remnant. *Quarterly Journal of Economics*. **85**, 237-261.
- World Bank (2000). *The Logframe Handbook – A logical framework approach to project cycle management*. New York. The World Bank.
- World Bank. (2005). World Development Indicators database. Retrieved 26 April 2007 from <http://devdata.worldbank.org/external/CPProfile.asp?PTYPE=CP&CCODE=PER>.
- World Bank. (2006). Perú: Banco Mundial aprueba US\$60 millones para electrificación rural. Retrieved 26 April 2007 from <http://web.worldbank.org>.
- Yin, R. K. (2003). *Case study research – Design and Methods*. Applied Social Research Methods Series – Volume 5. 3<sup>rd</sup> edition. Sage Publications, 181.
- Zabel, H.-U. (2004). Aufgaben des betrieblichen Nachhaltigkeitsmanagements. *UmweltWirtschaftsForum*. **12**(4), 70-77.

## Annex

### 1. Case study guideline

#### 1.1. Interview guideline for first meeting with project developer

*Text in italics = notes for the interviewer.*

#### **Background information on the company**

1. Sustainability management is highly company-specific. To get started, please illustrate the organisational structure of your company. Please provide an organigram if possible.  
*e.g. hierarchical, patriarchal, flat hierarchies, functional, process-oriented...*  
Please try to explain the information flows in your company.
2. The CDM PA may just be one of the activities your company is engaged in. Which departments of your company are involved in the CDM PA?

#### **Perception of the CDM**

3. What do you expect from the CDM for your company?  
*e.g. technology transfer, financing, reputation, national policy, take part in the political climate change debate*

#### **National legislation**

4. Which relevant national environmental and/ or sustainability regulations, legislations and programmes have to be taken into account for your CDM PA? (please indicate links to websites and documents, if possible)

In general:

Sector	Regulations, legislations, programs	Relevance for CDM PAs (e.g. binding, guidelines, minimal standards, benchmarks)

#### **EIA**

5. Have you carried out an EIA for your CDM PA?  
Yes   
No  *continue with question 9.*
6. How does the EIA look like? What are the elements?
7. Is an EIA mandatory for this project type?  
Yes   
No  Please explain why you undertook the EIA.

#### **DNA criteria for SD**

8. The MA state that CDM PAs have to lead to additional emission reductions and contribute to SD. What do you think, how can these goals be fulfilled?
9. In your opinion, is it important to dispose of criteria to assess the contribution to SD of a CDM PA?  
Yes   
No   
Don't know



3. ERs and SD are equally important goals.
4. ERs are an element of the concept of SD.
5. Other  please explain.
22. How is SD defined in your company?  
 Procedure (who provides the definition of SD and how), if possible, please indicate different steps:  
 Content (essential components)  
 Please indicate whether:  
 Operational SD criteria (e.g. job creation, pollution) were developed:  
 Yes   
 No   
 SD indicators (e.g. x jobs/annum, x% pollution/filter) were developed:  
 Yes   
 No

### Goal system

23. What is the time horizon for the strategic planning in your company?  
 For business plans: (about 2 years?)  
 For strategies and visions: (about 30 years?)
24. Has your strategic management formulated explicit company goals?  
 Yes   
 No  continue with question 31.
25. Are these goals placed in a hierarchy? (Will the answer be honest?)  
 Yes  please provide a description.  
 No
26. How do you measure goal attainment?
27. How are goal conflicts detected?  
*Risk management system? Direct feedback?*
28. How are goal conflicts dealt with?  
*Ethical guidelines? Controlling?*
29. Do the CDM goals (ERs & SD) explicitly belong to your company goals?  
 Yes   
 No   
 Why?
30. What do you think, how are the CDM goals and the company goals related to each other?  
 Are they independent from each other?  
 Yes  done. Why?  
 No   
 Do they influence each other?  
 Yes   
 No  done. Why? *They cannot form a trade off?*  
 Do they influence each other in a positive way?  
 Yes  how?  
 No  why?  
 Can they be in conflict?  
 Yes  how?  
 No  why?
31. Which steps and processes, if any, do you use to optimize your CDM PA under sustainability aspects?
32. Do you control / document SD indicators of your CDM PA?  
 Yes  No  why?

frequency	indicator
continuously	
daily	
weekly	
monthly	
yearly	
not regularly (how often?)	

### Three pillars

33. Do you know the concept of the three pillars of SD?  
 Yes  please illustrate it.  
 No  *Explanation.*
34. Do you use concept of the three pillars of SD?  
 Yes   
 No  *continue with question 37.*
35. Are there other pillars included into your definition of SD?  
 Which? *and/or Why?*
36. Should the different pillars be addressed with equal weight?  
 Yes   
 No   
 Depends  on what?  
 Why?  
 What is the current practice?

### Gold Standard

37. Do you know the criteria of the Gold Standard?  
 Yes  please illustrate and provide your opinion what you think of them.  
 No  *continue with question 44.*
38. What importance do the criteria of the Gold Standard have for your CDM PA?
39. Do you think they are operational enough?  
 Yes  for what purpose?  
 No  why?  
 Don't know
40. Do they help you to improve your CDM PA?  
 Yes  How?  
 No  Why?  
 Don't know
41. Do you think that the following statements are rather right or wrong? Please explain.  
 The Gold Standard signals the contribution of a PA to SD.  
 Yes  why?  
 No  why?  
 The Gold Standard proofs the contribution of a PA to SD.  
 Yes  why?  
 No  why?
42. How much can a CDM PA not qualifying as a Gold Standard PA contribute to SD?  
 Not at all   
 In a limited way   
 Considerably  As much as a CDM Gold Standard PA   
 Don't know   
 Why?

## The MDGs

43. Do you know the MDGs?  
 Yes  please illustrate and provide your opinion what you think of them.  
 No  *continue with question 48.*
44. What importance do the criteria of the MDGs have for your CDM PA?
45. Do you think they are operational enough?  
 Yes  for what purpose?  
 No  why?  
 Don't know
46. Do they help you to improve a CDM PA?  
 Yes  How?  
 No  Why?  
 Don't know

## Concepts and sustainability management systems

*Very probable that nothing is known in detail*

47. Do you know /use / consider?

	Do you know?		Do you use?				Considered?				
			In general?		For CDM?		In general?		For CDM?		
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
TBL / three pillars											
ISO 9000 series											
ISO 14000 series											
SA 8000											
AA 1000 series											
BSC											
SBSC											

Other:

*If known, discuss advantages and disadvantages*

## Participation

48. What do you think of the following statement: “*It can be dangerous if people take part from a position of ignorance. It can increase ownership of decisions and could cause disillusionment if participants have different power levels*” (Simon, 2004)
49. Do you have a team dedicated to SD?  
*Strongly depends on company size.*  
 Yes  Is this team interdisciplinary?  
 Yes  No   
 No  Do you think a company should have one?  
 Yes  No   
 Why?  
 Is it / should it be interdisciplinary?  
 Yes  No   
 Why?  
 Is it / should it be independent?  
 Yes  No   
 Why?
50. Who are the stakeholders of your CDM PA?  
*Pressure groups?*  
 Internal stakeholders:  
 External stakeholders:

51. How do you identify them?  
 52. How do you identify stakeholders' "needs"?  
 53. Is information gathered directly from stakeholders?  
 Yes  please explain how.  
 No  Why?  
 54. Is the information on stakeholders needs explicitly integrated into definitions and decisions?  
 Yes  How?  
 No  Why?

*Explanation of different approaches to involve stakeholders: participatory approach, stakeholder consultation, stakeholder hearing, company presentation.*

55. What do you think of a participative approach to define  
 International SD criteria?  
 National SD criteria?  
 Project-specific SD criteria?

56. How are the stakeholders involved under the current practice?

	<b>When?</b>	<b>How? Procedure</b>	<b>Why? Mandatory?</b>
<b>Participatory process</b>			
<b>Stakeholder consultation</b>			
<b>Stakeholder hearing</b>			
<b>Company presentation</b>			

57. Are you overall rather satisfied or unsatisfied with the way the procedures for stakeholder involvement?  
 Overall satisfied  please explain why.  
 Overall unsatisfied  please explain why.  
 58. Are SD aspects dealt with during these meetings?  
 Yes  please explain.  
 No  continue with question number 61.  
 59. Are SD aspects addressed sufficiently during these meetings?  
 Yes  please explain.  
 No  continue with question number 62.  
 60. Would it be practicable to address SD questions during these meetings?  
 Yes  No   
 Why?  
 61. Would you be willing to conduct (or are you already conducting) a discussion on the definition of SD during these meetings with the stakeholders?  
 Yes  Already?   
 No   
 Why?

## Learning

62. Do you have feedback loops in some of the processes in your company?  
*Information system, direct feedbacks during regular meetings*  
 No  How do you control quality?  
 Yes

<b>frequency</b>	<b>process</b>	<b>feedback loops</b>
Daily		

Weekly		
Monthly		
Yearly		
Not regularly (how often?)		

Please illustrate.

63. How does a “learning organization” look like in your opinion? *Could be tricky.*

Theory:

Practice:

### Future reactions

64. How will you react, if ex-post you realize that your CDM PA  
 has a very positive impact on SD?  
 has no effect regarding SD at all?  
 has a some negative effects on some SD?  
 has a very negative overall effect regarding SD?

## Open discussion of the Sustainability Management Approach

### 1.2. Guideline for the group discussions with project developer

The discussion guidelines consisted in a description of the steps to undertake with information on how to carry them out and the estimated time needed for each step

### Second meeting (discussion) with the project developer

- Provide an introduction to the research topic.
- Discussion of national and international sustainable development criteria guided by the list. Let participants choose which criteria they think are relevant for their project activity.
- Selection of criteria where the project developer thinks he can have an impact.
- Based on these criteria develop of a goal hierarchy (long-term goal, mid-term and short-term preconditions). Ask participants how they intend to reach each goal. First make participants think what must change, then how. Use only nouns to describe the goals. Use verbs instead to describe the activities. Activities and sub-goals of one path have to be all required to reach the goal. Ask for existing activities which might match the goals to be achieved.
- Make the participants think about external influences which could have an impact on the outcome of their strategy. Let the participants include these factors into the pathway of sustainable development.
- Define the resources needed to carry out the activities.
- Transcript: anonymous (pseudonyms will be used for each person) and live

### Third meeting (discussion) with the project developer

- Presentation of the results of the last meeting by the facilitator (moderation: ask again for clarifications, resume of important parts; and explain what will have to be done during this meeting).
- Check for inconsistencies, goal conflicts, and logical errors with the group members. Ask for questions of understanding, whether there are elements which surprise the participants, whether there are elements which should not be included, ask whether there are elements missing, whether the logical

connections are plausible to the participants, ask whether potential goal conflicts can be made out.

- Specify SMART (specific, measurable, action-oriented, realistic, timed) draft indicators. The development of indicators is assigned to the group members (brainstorming). Define an indicator for each activity. Define the current status and the target value or threshold. Define the timeline.
- Provide a short introduction into the procedure of stakeholder analysis and the discussion of underlying assumptions.
- Enlarge upon the definition of stakeholders departing from the information collected during the first interview. Define for each stakeholder/stakeholder group its interests/needs. Ask the following questions to guide the participants
  - Who is affected?
  - Who has an interest?
  - Who is in a position to affect its adoption/execution?
  - Who has expressed an opinion on this matter?
  - Who ought to care about the outcome?
- Divide the group into two sub-groups: PRO and CONTRA
- Assumption surfacing: Go from one group to the other back and forth and ask probing questions to help the participants to formulate their assumptions. Ask questions such as:
  - What could damage the success of your strategy?
  - The “inverse optimal question”: What has to be assumed about each stakeholder so that these assumptions logically make your strategy optimal?

This task completed, ask probing questions to help the participants to and to attribute weights to them. Make them identify six to eight pivotal assumptions per working group.

- How important is an assumption regarding success or failure of the strategy?
- How certain are we that the assumption is justified?
  - Take each assumption and negate it (counterassumption). Would this have a significant bearing on the strategy? Discard not relevant assumptions.
  - Importance and certainty
- Presentation of the results of the focus group (each group has about 20 minutes). Only clarifying questions allowed.
- After each group has presented its case, all sets of assumptions are put on the wall. Carry out the discussion of underlying assumptions along the stakeholders / stakeholder groups defined. Start with one group and let the other group comment the assumptions. Ask the following questions:
  - Do you have questions of understanding?
  - What surprises you?
  - Which assumptions are wrong from your point of view and why?

The do the same with the second group.

In case there is no agreement:

- Assumption negotiation for assumptions for which no encroachment can be achieved: identify the most untenable assumptions of the others. Groups are asked to reformulate these assumptions. Now acceptable?
- If agreement is struck, draw assumptions remaining disputed from the pool and place it in the final list. They need further discussion at a later stage.

- Establish the list of accepted assumptions. Identify pending assumptions if necessary: Consensus reached on an assumption: becomes a premise or a presumption; No consensus reached on an assumption: further investigation
- Adapt the pathway of sustainable development, if necessary. Check again for inconsistencies, goal conflicts, logical errors with the group members
- Wrap up: Clarify open questions, obtain feedback from the company, provide own conclusion, and clarify the opportunity to get in touch after the case study.
- Transcript: anonymous (pseudonyms will be used for each person) and live

## 2. Pretest

The pre-test took one and a half hour (2.30 – 4pm) and took place on 12 January 2006. It led to the following adjustments: Deleted passages are strikeout; added passages are framed and comments are printed in bold and italics.

*Text in italics = notes for the interviewer.*

### **Background information on the company**

1. Sustainability management is highly company-specific. To get started, please illustrate the organisational structure of your company. Please provide an organigram if possible.  
*e.g. hierarchical, patriarchal, flat hierarchies, functional, process-oriented...*  
Please try to explain the information flows in your company.
2. The CDM PA may just be one of the activities your company is engaged in. Which departments of your company are involved in the CDM PA?
3. In order to understand better, how your company works, please illustrate the value chain and the information flows within your company. (You may even insert a chart.)

***You will not get (honest) answers there.***

### **Perception of the CDM**

4. What do you expect from the CDM for your company?  
*e.g. technology transfer, financing, reputation, national policy, take part in the political climate change debate*
5. How would you characterize the current CDM evaluation practice?  
*(Validation, monitoring, verification)*

	<b>Characteristics</b>	<b>?</b>	<b>rather ...</b>	<b>+</b>	<b>rather ...</b>	<b>-</b>
1	<b>Design</b>		Comprehensive		Incomplete / fragmentary	
2	<b>Content</b>		Demanding		Lack of sophistication	
3	<b>Practicality</b>		Creates value added		Inhibiting	
4			Fast / easy		Time-consuming	
5	<b>Ethics</b>		Fair / just		Unfair / unjust	
6	<b>Necessity</b>		Necessary		Superfluous / unnecessary*	

\* Just the current CDM evaluation practice or in general?

***Would not know how to answer this.***

***Not well drafted and not needed for the research.***

### **National legislation**

6. Which relevant national regulations, legislations and programmes have to be taken into account for your CDM PA? (please indicate links to websites and documents, if possible)

*Without clarifying, that environmental and/ or sustainability are meant, the interviewee will not know which regulations, legislations and programmes.*

In general:

Sector	Regulations, legislations, programs	Relevance for CDM PAs (e.g. binding, guidelines, minimal standards, benchmarks)

## EIA

7. Have you carried out an EIA for your CDM PA?

Yes

No  *continue with question 10.*

8. How does the EIA look like? What are the elements?

9. Is an EIA mandatory for this project type?

Yes

No  Please explain why you undertook the EIA.

## DNA criteria for SD

*Introductory questions needed for the flow of the interview.*

*For the flow of the interview better clarify first whether criteria are considered important before asking the following questions.*

10. In your opinion, what could be reasons to define SD criteria for CDM PAs?

11. In your opinion, what could be reasons not to do so?

*The interviewees may have different attitudes towards criteria at the local level, the national level and the international level.*

12. Do you think a DNA should define a set of SD criteria?

Yes  Why?

No  Why?

*Don't-know-option was missing.*

13. Has your DNA defined criteria for CDM PAs?

Yes

No  *continue with question 16.*

14. Do you know where the DNA criteria can be found?

*This sounds like testing knowledge, not very pleasant for the interviewee.*

*Better ask a question with regard to the content or process of deriving criteria to find out how well the interviewees are informed.*

15. How do these criteria affect your CDM PA?

*Change to general "a CDM PA" for more information (maybe not yet so much experience with their own CDM PA) and ask also why the criteria affect a CDM PA.*

*Ask how the DNA criteria should be derived and how they should affect a CDM PA to better understand their reasoning.*

*Introduce the section on the definition of sustainability and SD here.*

*Move the section of the three pillars / Triple Bottom Line here.*

*Introduce headlines before treating the concepts GoldStandard and MDGs.*

16. Do you know the criteria of the CDM Gold Standard?

Yes

No  *continue with question 20.*

*Let the interviewee illustrate and provide his opinion.*

17. What importance have the criteria of the Gold Standard have for your CDM PA?

**Language!**

18. Do you think they are operational enough?  
Yes  for what purpose?  
No  why?  
Don't know
19. Do they help you to improve your CDM PA?  
Yes  How?  
No  Why?  
Don't know

***In case the CDM GoldStandard is known, ask further questions to understand the attitude of the project developer and to find out how well informed he/she is already. Include questions whether the interviewee thinks the GoldStandard is a means to rather signal or proof a contribution to sustainable development. In addition, add a question regarding the possible contribution to sustainable development of project activities that are not eligible under the GoldStandard.***

20. Do you know the MDGs?  
Yes   
No  continue with question 24.

***Let the interviewee illustrate and provide his opinion.***

21. What importance have the MDGs for your CDM PA?

**Language!**

22. Do you think they are operational enough?  
Yes  for what purpose?  
No  why?  
Don't know
23. Do they help you to improve a CDM PA?  
Yes  How?  
No  Why?  
Don't know
24. Are you in favour or against national SD criteria for CDM PA's?  
In favour   
Against   
Don't know   
Why?

Comment by the interviewee: address this together where you differentiate between local, national and international criteria. Provide possibility to weight the answers.

## **Sustainability Management**

***Move this section up (as mentioned before).***

### **Goal system**

25. What is the time horizon for the strategic planning in your company?  
***For business plans about 2 years are realistic, for strategies and visions about 30 years.***
26. Has your strategic management formulated explicit company goals?  
Yes   
No  continue with question 28.
27. Are these goals placed in a hierarchy?  
***Will the answer be honest?***  
Yes  please provide a description.

No

28. How do you measure goal attainment?

29. How are goal conflicts detected?

*Usually through risk management system and direct feedback.*

30. How are goal conflicts dealt with?

*Usually following ethical guidelines, not so much via Controlling.*

31. Do the CDM goals (ERs & SD) explicitly belong to your company goals?

Yes

No

Why?

32. What do you think, how are the CDM goals and the company goals related to each other?

Are they independent from each other?

Yes

No

*In case they are, ask why.*

Do they influence each other?

Yes

No

*In case they are, ask why.*

Do they influence each other in a positive way?

Yes  how?

No  why?

Can they be in conflict?

Yes  how?

No  why?

*Include a question on how to optimize the CDM PA under sustainability aspects.*

*Include a question on whether SD indicators are controlled / documented and how regularly.*

## Definition of sustainability and SD

33. Do you think that sustainability is the same as sustainable development?

*Will not be able to answer, too theoretical, better ask whether they know a definition of SD which is valid worldwide in all contexts. Provide a yes-option and let the interviewee describe the definition, and provide a no-option and ask the interviewee why there is none, if this option is selected.*

34. How are the CDM goals, ERs and SD, related to each other from your perspective?

1. ERs are the main goal, SD is a secondary goal.

2. SD is the main goal, ERs are a secondary goal.

3. ERs and SD are equally important goals.

4. ERs are an element of the concept of SD.

5. Other  please explain.

35. How is SD defined in your company?

Procedure (who provides the definition of SD and how), if possible, please indicate different steps:

Content (essential components)

Please indicate whether:

Operational SD criteria (e.g. job creation, pollution) were developed:

Yes

No

SD indicators (e.g. x jobs/annum, x% pollution/filter) were developed:

Yes

No

### Concepts and sustainability management systems

*Very probable that nothing is known in detail*

36. Which concepts and instruments, if any, do you use to optimize your CDM PA under sustainability aspects?

37. Do you monitor SD indicators of your CDM PA?

Yes  No  why?

frequency	indicator
continuously	
daily	
weekly	
monthly	
yearly	
not regularly (how often?)	

*Move up and ask for the processes instead of concepts and instruments.*

*Move up and ask whether the indicators are controlled / documented and how regularly.*

*Ask after the section on the MDGs how SD indicators of the CDM PA are monitored (ask for different standards and concepts such as ISO and BSC and provide the opportunity to mention other approaches).*

### Triple-bottom-line / three pillars

*This section is move towards the top as indicated before.*

*Don't call it triple bottom line (also in the following).*

38. Do you know the concept of the triple-bottom-line/ the three pillars of SD?

Yes  please illustrate it.

No

Do you use it concept in your company?

Yes

No

Have you considered it?

Yes

No

Why?

Do you use it for your CDM project activity?

Yes

No

Have you considered it?

Yes

No

Why?

*Make it an independent question and simplify.*

39. Are there other pillars included into your definition of SD?

Why?

*Ask which ones.*

40. Should the different pillars be addressed with equal weight?

Yes

No

Why?

*Add an option "depends" and let interviewee explain. Also ask for current practice.*

*Delete the following section on EMS, SMS and BSC/SBSC, it's getting too lengthy. Insert the above mentioned table instead.*

41. Have you heard about environmental management systems?

Yes  please illustrate it.  
 No

Do you use it concept in your company?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

Do you use it for your CDM project activity?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

42. Have you heard about sustainability management systems?  
 Yes  please illustrate it.  
 No

Do you use it concept in your company?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

Do you use it for your CDM project activity?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

43. Have you heard about the following accounting standards? Do you use/consider any?

***Not accounting standards, but concepts, standards, and management approaches.***

	Do you know?		Do you use?		Are you considering them?	
	Yes	No	Yes	No	Yes	No
ISO 9000 series						
ISO 14000 series						
SA 8000						
AA 1000 series						

If known:

Advantages Disadvantages

If used / considered:

Also for CDM project activity? Why?

**Balanced Scorecard (BSC)**

44. Have you heard about the BSC?

Yes  please illustrate it.  
 No

Do you use it concept in your company?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

Do you use it for your CDM project activity?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

45. Have you heard about the SBSC?

Yes  please illustrate it.  
 No

Do you use it concept in your company?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

Do you use it for your CDM project activity?  
 Yes  No  Have you considered it?  
 Yes   
 No  Why?

## Participation

65. ***Need for an “opener” to launch discussion: Include the following statement for discussion: “It can be dangerous if people take part from a position of ignorance. It can increase ownership of decisions and could cause disillusionment if participants have different power levels” (Simon, 2004)***

46. Would you say that there is a one and only definition of sustainable development which is valid worldwide in all contexts?  
 Possible elements: inter-generational justice, intra-generational justice, 3+ pillars  
 Yes  How does this definition look like? Adapt to context?  
 Implementation  
 No  Why?

***Move this question towards the beginning (where it has been mentioned).***

47. Do you have a team dedicated to sustainable development?

***Strongly depends on company size.***

Yes  Is this team interdisciplinary?  
 Yes  No

No  Do you think a company should have one?  
 Yes  No   
 Why?  
 Is it / should it be interdisciplinary?  
 Yes  No   
 Why?

***Above all it should be independent***

48. Who are the stakeholders of your CDM PA?

***For instance pressure groups, clients. Classify into internal and external stakeholders.***

49. How do you identify them?

50. How do you identify stakeholders’ “needs”?

51. Is information gathered directly from stakeholders?

Yes  please explain how.  
 No  Why?

52. Is the information on stakeholders needs explicitly integrated into definitions and decisions?

Yes  please explain how.  
 No  Why?

***Before continuing, provide an explanation of different approaches to involve stakeholders: participatory approach, stakeholder consultation, stakeholder hearing, company presentation.***

***Delete question 53, because it sounds like an “exam”.***

53. In order to define SD criteria, a participatory approach can be used. Do you know what a participatory approach is?  
 Yes  please illustrate it.  
 No  *explanation by the interviewer*  
 Can you describe the difference between a participatory approach and a pure consultation?  
 Yes  please illustrate it.  
 No  *explanation by the interviewer*  
 For which reasons may a participatory approach be used?  
*e.g. used for legitimacy reasons and to empower the stakeholders*  
 For which reasons may just a consultation approach be used?  
*e.g. property rights*
54. What do you think of a participative approach to define SD criteria?  
 Is it feasible from your point of view for your CDM PA?  
***Differentiate also here between project-specific, national and international SD criteria. Delete second question.***
55. Is it in your opinion important that in a participatory approach, there is room for non-agreement?  
 Yes  please explain why and how.  
 No  please explain why.  
***Delete this. Too complicated. Better ask how the stakeholders are involved under current practice (differentiating between the different types of participation and specifying when it takes place, how and why).***
56. Are you overall satisfied with the way the procedures for stakeholder involvement?  
***Wording: ... overall rather satisfied or rather unsatisfied ...***  
 Yes  please explain why.  
 No  please explain why.  
***Adapt the answers!***
57. Are SD aspects dealt with during the hearing?  
***Better "the meeting".***  
 Yes  please explain.  
 No  *continue with question number 59.*
58. Are SD aspects addressed sufficiently during the hearing?  
***Better "these meetings".***  
 Yes  please explain.  
 No  *continue with question number 60.*
59. Would it be possible regarding practicability to address SD questions during these meetings?  
***Rephrase.***  
 Yes  No   
 Why?
60. Would you be willing to conduct (or are you already conducting) a discussion on the definition of sustainable development during the CDM stakeholder consultation?  
***Better "during these meetings with the stakeholders"***  
 Yes  No  Already  
***Clearly separate the yes- from the no-option.***  
 Why?

## Learning

61. Do you have feedback loops in some of the processes in your company?

*E.g. information system, direct feedbacks during regular meetings*

No  How do you control quality?  
 Yes

frequency	process	feedback loops
Daily		
Weekly		
Monthly		
Yearly		
Not regularly (how often?)		

Please illustrate.

62. How does a “learning organization” look like in your opinion?

*Could be tricky for the interviewees to answer. Split the question between theory and practice.*

*Delete the following questions. Not necessary and go to much into the detail. Not well phrased.*

63. What are the advantages of organizational learning?

64. Do you think that organizational learning has positive impacts on

a. Internal communication?

Yes  No  why?

b. Employees’ identification with company goals?

Yes  No  why?

c. Conflict prevention with stakeholders?

Yes  No  why?

d. Risk detection (early warning function)?

Yes  No  why?

e. The individuality of a company?

Yes  No  why?

*Instead include a question with regard to the project developer’s future reactions in case his / her CDM PA has a very positive impact, has no effect, has some negative effects or has a very negative overall effect regarding SD.*

### 3. Set of SD criteria

#### Peruvian policy:

National sustainable development criteria were extracted from governmental documents.

Peruvian policy	
Criteria	Source
Healthy, balanced environment	Constitution
National heritage	Constitution
Biodiversity	Constitution
Access to information	General Environmental Law
Stakeholder participation	General Environmental Law
Population and the environment: relationship between culture and environment, role of indigenous villages, farmer and native communities, and importance of collective knowledge	General Environmental Law
Companies and environment: integral management and prevention at the source, environmental management systems and continuous improvement, clean production, the company’s social responsibility, promotion of voluntary norms, technical norms, quality norms and eco-labelling, sustainable tourism, responsible consumption, and treatment of dangerous substances	General Environmental Law

natural resources: water, air, soil, rainforest and its fauna, as well as the use of non-renewable resources biodiversity (conservation of the ecosystems, weak ecosystems, mountain ecosystems, marine and coast ecosystems, conservation of species, conservation of genetic resources, protection of traditional knowledge, biotechnology, conservation in situ and ex situ, protected natural areas and the conservation of the landscape as a natural resource)	General Environmental Law
health: water quality for human consumption, noises and vibrations, radiations, emissions, air quality, management of solid residues, water quality in general, waste water management and management of liquid residues	General Environmental Law
Promotion of research	General Environmental Law
Responsibility for environmental damages	General Environmental Law
Integration of policies	National Environmental Policy
Transversal character of environmental management	National Environmental Policy
Overcome poverty	National Environmental Policy
Conservation and sustainable use of natural resources	National Environmental Policy
Integrated vision of ecosystems	National Environmental Policy
Environmental quality and urban habitability	National Environmental Policy
Prevention of contamination	National Environmental Policy
Good practices and corporate social responsibility	National Environmental Policy
Health and the right to live in a healthy environment	National Environmental Policy
Education, environmental conscience and culture, as well as civic participation in environmental decisions	National Environmental Policy
Access to environmental information and environmental justice	National Environmental Policy
Sustainable development as a premise of trade policy	National Environmental Policy
Conserve, administer, valorize and use natural resources and cultural heritage sustainably	National Environmental Policy
Adequate access genetic resources and traditional knowledge	National Environmental Policy
Equitable distribution of benefits	National Environmental Policy
Effective application of the environmental legislation	National Environmental Policy
Efficient compliance of the environmental objectives	Framework of Environmental Management
Trans-sectoral mechanisms for environmental management	Framework of Environmental Management
Participation of citizens	Framework of Environmental Management
Overcome poverty	19 <sup>th</sup> policy of the National Agreement
Integrate policies	19 <sup>th</sup> policy of the National Agreement
Life quality	19 <sup>th</sup> policy of the National Agreement
Institutionalize public and private environmental management	19 <sup>th</sup> policy of the National Agreement
Sustainable settlements	19 <sup>th</sup> policy of the National Agreement
Knowledge	National Environmental Agenda
Quality and environmental health (e.g. referring to clean production)	National Environmental Agenda
Education	National Environmental Agenda
Commerce	National Environmental Agenda
Local, rural, decentralized development	National Decentralization Plan

Political decentralization	National Decentralization Plan
Scientific, technological, social and economic investigation	National strategy on climate change
Adaptation capacity to climate change effects and reduction of vulnerability	National strategy on climate change
Rational management of GHG emissions, other air pollutants and the reduction of the climate change impact	National strategy on climate change
Diffusion of national knowledge and information on climate change	National strategy on climate change
Poverty alleviation, vulnerability reduction and/or GHG mitigation	National strategy on climate change
Use of adequate and appropriate technologies	National strategy on climate change
Participation of the society	National strategy on climate change
Management of forestry ecosystems	National strategy on climate change
Management of fragile ecosystems especially mountainous ecosystems	National strategy on climate change
Local capacities	National strategy of the CDM
Capital and technology transfer	National strategy of the CDM
Disseminate information	National strategy of the CDM

The criteria of the United Nations Environment Programme “Capacity Building for the Clean Development Mechanism”, in short “CD4CDM” (Olhoff et al., 2004), were chosen as they were explicitly developed for the CDM.

CD4CDM criteria		
Economic	Environmental	Social
Cost effectiveness	Climate change	Legal framework
Growth	Air pollution	Governance
Employment	Water	Information sharing
Investments	Soil	Equity
Sectoral development	Waste	Poverty alleviation
Technological change	Exhaustible resources	Education
	Biodiversity	Health

The CDM Gold Standard criteria were chosen as this is so far the most prominent standard certifying the sustainability of CDM project activities<sup>1</sup>.

CDM Gold Standard criteria		
Economic and technological development	Local/regional/global environment	Social sustainability and development
Employment (numbers)	Air quality (emissions other than GHGs)	Employment (including job quality, fulfillment of labour standards)
Balance of payments (sustainability)	Water quality and quantity	Livelihood of the poor (including poverty alleviation, distributional equity, and access to essential services)
Technological self reliance (including project replicability, hard currency, liability, skills development, institutional capacity, technology transfer)	Other pollutants (including, where relevant, toxicity, radioactivity, POPs, stratospheric ozone layer depleting gases)	Access to energy services

<sup>1</sup> Excluding afforestation and reforestation project activities.

	Biodiversity (species and habitat conservation)	Human and institutional capacity (including empowerment, education, involvement, gender)
--	---	--

Multi-Attributive Assessment of CDM (MATA-CDM) (Sutter, 2003, 81) is applied as it is a prominent scientific approach which was applied to case studies and has been adopted by the DNA of Uruguay.

MATA-CDM criteria		
Economic Development	Environmental Development	Social Development
Micro-economic efficiency	Fossil energy resources	Stakeholder participation
Regional Economy	Air quality	Improved service availability
Employment Generation	Water quality	Capacity development
Technology Transfer	Land resources	Equal distribution

The Sustainability Assessment Model (SAM) (Begg et al., 2003, 17ff.) is a scientific approach for small-scale CDM project activities. These criteria are included as one of the case studies is a small-scale CDM project activity.

SAM criteria		
Personal wellbeing (income/trade)	Natural resource base	Personal wellbeing (social)
Financial (funds, income generation, affordability)	Land (food, habitat, forest, land)	Empowerment (marginal groups, social networks, wider base, security)
Physical (infrastructure, energy, dwelling)	Water (water supply)	Human resources (skills, education, jobs, health, time)
	Air (GHG reductions, air pollution)	

Exemplary business criteria were taken from Arnold et al. (2001, 46f.):

1. Sustainable corporate policy orients itself not primarily at flows (e.g. profit, cash flow, turnover, wage bill), but also considers the stocks of economic, environmental and social capital/assets affected by its activities to at least conserve them and at most increase them.
2. Sustainable corporate policy prefers therefore activities, which fulfil the conditions of a long term conservation or increase of economic, social and natural stocks affected by its activities. In doing so, limited substitutability of natural and social capital/assets by economic capital/assets is considered. Dominant is the conservation of those assets whose consumption would signify an irreversible loss in substance.
3. Sustainable corporate policy aims at long-term securing / protection of success and development potentials of the company. It is normatively founded, strategically oriented and attempts to make day-to-day business fit into the defined normative visions and strategic guidelines through the use of appropriate strategic management instruments.
4. Sustainable corporate policy pursues a strategy of continuous improvement of resource productivity through exhaustion of process optimization and innovative process and product design. Thereby it reduces the relative measure for resource use and enters a process of inversion of priorities of rationalization, in which corporate rationalization no longer mainly concerns manpower but material inputs and exploits considerable savings potentials.
5. Sustainable corporate policy endeavors to absolutely reduce resource consumption and emissions, as far as the economic conditions allow for and the global and national sustainability priorities request it.
6. Sustainable corporate policy involves employees in the design and implementation of the corporate activities. Thereby, it uses and develops the social capital, that is available and elaborates in the meantime organizational learning ability and thereby its economic future prospects.

7. Sustainable corporate policy does not stick to existing products and programs, but understands its social task mainly as resolving specific problems of its clients. These problems can be sustainably resolved with intelligent, function-oriented product or service bundles.
8. Sustainable corporate policy has to persist in competition. Nevertheless, it looks for cooperative solutions in form of alliances and networks (along the value chain or regional) in which it impacts upon suppliers, clients and partners in the purpose of sustainability.
9. Sustainable corporate policy understands corporate governance as a process of balance of stakeholder groups with different power of enforcement and interest in influencing. None of these stakeholder groups has generally priority, on the contrary an acceptable conciliation of demands/claims is deemed indispensable for securing long term corporate existence.
10. Sustainable corporate policy does not accept the current economic, political and natural conditions as an uninfluenceable date, but interferes as a political actor in the societal discourse for creation of general conditions conducive to sustainability, and therefrom draws orientation for its own further development.

The Rio Principles as well as the MDGs are included as they represent a certain international consensus with regard to the sustainability discussion. These are political declarations of intend. They provide a general orientation for project developers, but the criteria and principles are not operational for the project level. The Rio Principles were chosen as they form the basis of the UNFCCC.

### **Principles of the Rio Declaration on Environment and Development**

**Principle 1:** Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

**Principle 2:** States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

**Principle 3:** The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

**Principle 4:** In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

**Principle 5:** All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

**Principle 6:** The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

**Principle 7:** States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

**Principle 8:** To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

**Principle 9:** States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

**Principle 10:** Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

**Principle 11:** States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

**Principle 12:** States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

**Principle 13:** States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

**Principle 14:** States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

**Principle 15:** In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

**Principle 16:** National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

**Principle 17:** Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

**Principle 18:** States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

**Principle 19:** States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

**Principle 20:** Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

**Principle 21:** The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

**Principle 22:** Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

**Principle 23:** The environment and natural resources of people under oppression, domination and occupation shall be protected.

**Principle 24:** Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

**Principle 25:** Peace, development and environmental protection are interdependent and indivisible.

**Principle 26:** States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

**Principle 27:** States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

The Millennium Development Goals were included as they are the most recent summary of the most urgent development priorities worldwide.

### **Millennium Development Goals**

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
8. Develop a global partnership for development

It could be observed that the main aspects of sustainable development, however, converge. For instance, experiences from the PCF (Huq, 2002) and criteria published by the WRI (Austin et al., 1999) are very similar to the ones listed above. The PCF criteria include the GDP and the GDP per capita as criteria, but these are macro-criteria not relevant at the project level. The WRI includes rural development which is a national priority of Peru and which matches also with the criterion of regional development.

#### 4. Company A: Indicators

Indicators	Specific	Measurable	Action-oriented	Realistic	Timed
1) 0.577 kgCO <sub>2</sub> e/kWh generated (start: operation)	treated	treated	treated	treated	treated (indirectly)
2) document (project cycle)	treated (EB)	treated	treated	treated	treated (indirectly)
3) at least in 40% of all requests for presentation	treated	treated	treated	treated	not treated (e.g. whole project life)
4) payback max. 5 years	treated	treated	not treated	treated	treated (indirectly)
5) meeting memos: (during planning phase of the actions & their execution)	treated	treated (qualitative)	treated	no target	treated
6) m <sup>3</sup> and % waste treated by each of the mentioned sustainable methods (start: operation)	treated	treated	treated	treated	treated
7) min. 1 big stakeholder consultation & 2 individual meetings per key stakeholder (before approval)	treated	treated	treated	treated	treated

8) XXm brick (start: CERs payment, 1st priority)	treated	treated	treated	no target	treated
9) XXm <sup>2</sup> , 10 new computers, basic equipment (start: CERs payment, 3rd priority)	treated	treated	treated	no target	treated
10) 2 rooms of XX m <sup>2</sup> (start: CERs payment, 2nd priority)	treated	treated	treated	no target	treated
11) m <sup>3</sup> removed (start: operation of plant I), BL? %?	treated	treated	treated	no target, no BL	treated
12) > 100% of local consumption covered (start: operation of plant I)	treated	treated	treated	treated	treated
13) before: 10kW, now: right for 20 kW, zero cost (start: operation of plant I)	treated	treated	treated	treated	treated
14) 6 pers. (start: operation)	treated	treated	treated	treated	treated
15) XX h / employee (when employed)	treated	treated	treated	no target	treated
16) XX h / employee (before construction)	treated	treated	treated	no target	treated
17) 40 pers. (from XX.XX. – XX.XX.XX)	treated	treated	treated	treated	not treated
18) 4 pers. (start: operation)	treated	treated	treated	treated	treated
19) > 50% (during construction)	treated	treated	treated	treated	treated
20) rent 30%, VAT 10% (per year)	treated	treated	treated	treated	treated

21) No. of new projects of the same project type	treated	treated	treated	no target	not treated (e.g. in next 5 years)
22) 50% of water quantity needed	treated	treated	treated	treated	not treated (e.g. whole project life)

**Table I:** Indicators of Case A

## 5. The role of NGOs and the Fondo Nacional del Ambiente (FONAM) in Peru

Strong stakeholder groups representing civil society in a country can function as an informal public supervision creating incentives for project developers to manage their project activities sustainably. On the contrary, if there are no institutions formally or informally supervising project activities, the incentive for project developers to contribute to sustainable development might be less intensive or even lacking completely. NGOs often play such a supervisory role. Their activities could shape the framing conditions for CDM project activities.

FONAM is a private institution, created by the Law N°26793 of the Congress of the Republic of Peru in 1997 with the objective to promote public and private investment in the development of plans, programs, projects and activities oriented toward the improvement of the environmental quality, the sustainable use of natural resources and the strengthening of capacities for an adequate environmental management. FONAM is recognized by the World Bank Prototype Carbon Fund as the Peruvian focal point for identification, qualification and operation of potential CDM projects activities. FONAM was interviewed because of its central role, its profound experience with CDM project activities as it had been part of the CDM process from the start and its strong influence on the design of CDM project activities as it provides consultancy to the biggest number of project activities.

Therefore, the current function of the NGOs and the national focal point in Peru was examined during the fieldwork<sup>2</sup>. As there was no literature and research available on the function of the Peruvian NGOs in the CDM process, semi-structured interviews were undertaken with key informants from NGOs knowledgeable on the CDM in Peru. It was, however, not easily traceable which NGOs were actively involved as observers (and not as project developers) in the CDM in Peru. In CONAM's self-evaluation of the national capacities of 2005, no NGOs were identified as actors in the area of the CDM (CONAM, 2005). Peruvian experts from the DNA and the interviewed NGOs confirmed this difficulty.

The interviews confirmed the initial expectation based on CONAM's self-evaluation: Currently, the NGOs do yet not assume an active part in CDM project activities not directly related to their own projects. If they are involved, they function as project developers themselves or take part in the stakeholder consultations, but they do not yet assume an active function as a critical observer and stakeholder on the CDM in general. Thus, this potential is left fallow.

To identify NGOs knowledgeable on climate change and the CDM, CONAM's website was consulted: The members of the National Commission on Climate

<sup>2</sup> The author was supported during this fieldwork by María Inés Sotomayor Ibañez.

Change included four NGOs.<sup>3</sup> Among the collaborators of SINIA, the environmental information service of CONAM, further eleven NGOs were identified.<sup>4</sup> The following table illustrates which NGOs have initially been contacted and what were the results. Other NGOs were generally known for their involvement in the CDM process or indicated by CONAM and CET.

The main outcomes were that only a small number of NGOs knows about the CDM and that those few involved do not assume the function of quality control of CDM project activities, but act themselves as project developers. They are mainly informed about their own projects and do not exercise pressure on other CDM project developers who do not contribute to the sustainable development of the country.

The reachability of the NGOs differed considerably. Many e-mail addresses or phone numbers provided online or in the phone book were no more valid. The author managed to carry out interviews with eight NGOs and Peruvian focal point, FONAM.

NGO	Result	Source
Conservación Internacional	No personal contact could be established during the fieldwork in Peru.	Member of National Commission on Climate Change and collaborator of SINIA
Foro Ciudades Para la Vida	No personal contact could be established during the fieldwork in Peru.	Member of National Commission on Climate Change
ITDG	<u>Interview:</u> Date: 2006-03-15 Time: 11am - 12.30am	Member of National Commission on Climate Change and collaborator of SINIA
Foro Ecológico	Interview scheduled, but contact interviewee did not turn up for the meeting.	Member of National Commission on Climate Change
Acción por los Niños	No personal contact could be established during the fieldwork in Peru.	Collaborator of SINIA
Alternativa	No personal contact could be established during the fieldwork in Peru.	Collaborator of SINIA
CARE Peru	<u>Interview:</u> Date: 2006-03-21 Time: 12am – 13am	Collaborator of SINIA
FONAM	Non-profit company, formerly part of CONAM. Interviewed because it is the official consultancy for CDM project activities and was formerly part of CONAM. <u>Interview:</u> 2006-03-23	Collaborator of SINIA
IPES	No personal contact could be established during the fieldwork in Peru.	Collaborator of SINIA
ProNaturaleza	<u>Interview:</u> Date: 2006-03-31 Time: 10am – 11am	Collaborator of SINIA
PROTERRA	No personal contact could be established during the fieldwork in Peru.	Collaborator of SINIA

<sup>3</sup> <http://www.conam.gob.pe/cambioclimatico/sobrela.htm> (2006-07-07)

<sup>4</sup> <http://www.conam.gob.pe/sinia/ongs.shtml> (2006-07-07)

Repemar	Represented by CET in Peru	Formerly collaborator of SINIA. Successor is CET
Centro de Eficiencia Tecnológica (CET)	<u>Interview:</u> Date: 2006-02-28 Time: 8:15am – 9:45am	Successor of Repemar <sup>5</sup>
SPDA	No personal contact could be established during the fieldwork in Peru.	Collaborator of SINIA
Union Mundial para la Naturaleza	Not involved in the CDM, but the collaborating NGO AIDER	Collaborator of SINIA
AIDER (Asociación para la Investigación y el desarrollo integral):	<u>Interview:</u> Date: 2006-03-22 Time: 10:20am – 11:40am	NGO cooperating with Unión Mundial para la Naturaleza and involved in the CDM.
Ecociudad	<u>Interview:</u> Date: 2006-03-01 Time: 10am – 12am	Collaborator of SINIA
greenpeace	No personal contact could be established during the fieldwork in Peru.	International NGO known for its involvement in the CDM
WWF	No personal contact could be established during the fieldwork in Peru.	International NGO known for its involvement in the CDM
Climate Action Network (CAN) International	<u>Interview:</u> Date: 2006-03-13 Time: 12.30am – 14.30am	International NGO known for its involvement in the CDM
Asociación Española para el Desarrollo Sostenible (AEDES)	No personal contact could be established during the fieldwork in Peru.	Indicated by CONAM
Ciudad Saludable	Not involved in the CDM	Indicated by CET

## 6. Policy analysis and final pathway

The following table illustrates the differences between the criteria chosen during the policy analysis and the final pathway of sustainable development. Most of the criteria initially selected were maintained, although they were often reformulated. Overlapping issues were consolidated (e.g. participation, stakeholder involvement and empowerment, or rural development and regional development). Some aspects considered obvious were no more mentioned explicitly (such as “use of renewable resources” by Company B and C). Other criteria were not very suitable because of their scope (e.g. “growth” or the “positive impact on the balance of payments” which were initially chosen but were abandoned by all because as they were too generic and the impact of the single project could not be shown easily).

Criteria chosen	Case A	Case B	Case C
Environmental criteria			
Emission reductions	Emission reductions	Emission reductions	Emission reductions
Reduction of fossil fuel	Displacement of heavy fuel, diesel, coal, gas	Substitution of fossil fuel by hydropower in grid mix	Substitution of fossil fuel by hydropower in electricity grid
Conservation of local resources	Sustainable use of resources (waste management, sustainable	Sustainable waste management (waste avoidance and treatment → water)	Natural resources (water, air, soil), conservation of cultural heritage

<sup>5</sup> The NGO Repemar formerly had its own office in Lima, but due to budget constraints this task is today assumed by the CET, which is member of the Executive Committee of Repemar. The CET was created in 2001 as a private consultancy due to the mentioned financial constraints. The CET is still the official contact of Repemar in Lima.

	investments)		
Reduced pressure on local environment	Sustainable waste management	<i>Not chosen</i>	Reduced local contamination, waste avoidance, substitution of fossil fuel through hydropower
Reduction of other pollutants (toxic substances such as oils and lubricants)	<i>Not chosen</i>	<i>Not chosen</i>	Reduced local contamination
Improve health and other environmental benefits	Water quality, waste management, use of renewable energies	Drinking water, waste water treatment	Closure of the thermal plant: reduced local contamination, less dehydration of the people, no noise pollution and respiratory illnesses near the old plant anymore
Air quality	<i>Not chosen</i>	<i>Not chosen</i>	Air
Water quality	Water quality	Water	<i>Initially not chosen</i> , Water (included in final pathway)
Soil quality	<i>Not chosen</i>	Soil	Soil
Waste management	Waste management	Waste management	Sustainable waste management
Use of renewable resources	Use of renewable energies	<i>No more explicitly mentioned in the final pathway of sustainable development, because obvious</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, because obvious</i>
Biodiversity	<i>Not chosen</i>	Biodiversity	Biodiversity
Economic criteria			
Income for local entities	Income for local entities	Payment of taxes	Sustainable tourism, agro-forestry projects, reduction of electricity tariffs
Positive impact on balance of payments	<i>Not chosen</i>	<i>Not chosen</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, too generic</i>
Employment	Reduction of local sub-employment	Creation of temporary jobs	<i>Initially only temporary workers considered, but in the final pathway: create area (department) of environment and social impacts → employ specialists</i>
Cost-effectiveness / micro-economic efficiency	Good management of investment	Improvement of the provision of electricity service	Use of additional income for sustainable investments
Reduce economic burden of energy imports	<i>Not chosen</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, too generic</i>	<i>Not chosen</i>
Growth	<i>No more explicitly mentioned in the final</i>	<i>No more explicitly mentioned in the final</i>	<i>No more explicitly mentioned in the final</i>

	<i>pathway of sustainable development, too generic</i>	<i>pathway of sustainable development, too generic</i>	<i>pathway of sustainable development, too generic</i>
Investments	The project activity itself / investments contributing to sustainable development	The project activity itself / investments in sustainable development	Sustainable investments ( <i>various ideas</i> )
Sector development	Creation of new market for SSC hydropower plants	<i>No more explicitly mentioned in the final pathway of sustainable development, expressed through the project activity itself</i>	<i>Not chosen</i>
Technological self-reliance	<i>No more explicitly mentioned in the final pathway of sustainable development, not considered decisive</i>	<i>Not chosen</i>	<i>Not chosen</i>
Technology transfer	<i>Not chosen</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, not considered decisive</i>	Technology transfer
Project replicability	<i>No more explicitly mentioned in the final pathway of sustainable development, represented through information sharing, creation of new market</i>	<i>Not chosen</i>	<i>Not chosen</i>
Skills development	Local capacity building	<i>Not chosen</i>	Learning
Regional economy	Rural development	Sustainable local development	Local sustainable development
Infrastructure	Local school infrastructure	Sustainable and planned infrastructure, electricity infrastructure, school infrastructure	Infrastructure/ planning of the sustainable city / town
Energy provision	Access to energy	Improvement of the provision of electricity service	Reduced tariffs
<b>Social criteria</b>			
Universal primary education	Local school infrastructure	Infrastructure of local schools	<i>Not chosen</i>
Promote gender equality and empower woman	<i>Not chosen</i>	<i>Not chosen</i>	Gender
Improve quality of life	Life quality	<i>No more explicitly mentioned in the final pathway of sustainable development, too generic</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, too generic</i>

Increase energy access	Access to energy	Higher security of the grid	<i>No more explicitly mentioned in the final pathway of sustainable development, but reduction of tariffs mentioned</i>
Good governance	Governance	<i>Not chosen</i>	<i>No more explicitly mentioned in the final pathway of sustainable development, too generic</i>
Information sharing	Information sharing	Information sharing	Information sharing
Employment (see economic criteria)	Reduction of local sub-employment	Creation of temporary jobs	<i>Initially only temporary workers considered, but in the final pathway: create area (department) of environment and social impacts → employ specialists</i>
Participation	Stakeholder involvement	Information and exchange of ideas with stakeholders, cooperation with stakeholders, NGOs	Several times mentioned: “in dialogue”, “in cooperation”, “participatory”
Improve service availability	Improved service (energy)	Higher security of the grid	<i>No more explicitly mentioned in the final pathway of sustainable development, but reduction of tariffs mentioned</i>
Capacity development	Local capacity building	Organizational learning, learning, training for employees	Learning
Empowerment (marginal groups, social networks)	Stakeholder involvement	<i>No more explicitly mentioned in the final pathway of sustainable development, overlapping with participation and involvement</i>	<i>Not chosen</i>
Education and training	Local capacity building, local school infrastructure, information sharing	Education of the population (waste treatment), learning, training for employees	<i>Not chosen</i>
Security	<i>Not chosen</i>	<i>Not chosen</i>	Security
Rural development	Rural development	<i>Not chosen</i>	Local sustainable development
<b>Business criteria</b>			
Stakeholder involvement	Stakeholder involvement	Information and exchange of ideas with stakeholders, cooperation with stakeholders, NGOs	Several times mentioned: “in dialogue”, “in cooperation”, “participatory”
Increase resource productivity (through experience)	Increased efficiency (energy)	<i>Not chosen</i>	<i>Not chosen</i>
Analysis of the	<i>Not chosen</i>	Sustainable waste	<i>Not chosen</i>

life cycle		treatment	
Cooperation along the value chain	<i>Not chosen</i>	Contract with waste company on sustainable treatment	<i>Not chosen</i>
Link strategy with daily processes	<i>Not chosen</i>	<i>Not chosen</i>	Organizational infrastructure
Organizational learning	<i>No more explicitly mentioned in the final pathway of sustainable development, due to company size</i>	Organizational learning	Organizational learning

## 7. DNA survey

### 7.1. Interview guideline

Date, Time: \_\_\_\_\_ DNA of: \_\_\_\_\_

Does your DNA have a website? Yes  \_\_\_\_\_  
 No  Why no website? \_\_\_\_\_

Is all important info provided online  or do you use other sources  for your reach out (such as electronic / non-electronic: e-mails, printed material)

Does your DNA have experience with CDM project activities?

Yes  \_\_\_\_\_  
 No  \_\_\_\_\_

How many project activities have been approved by your DNA? \_\_\_\_\_ (number)

CDM project activities have to be in line with the legislation and priorities of the host country. The contribution of a CDM project activity to sustainable development can be shown in many different ways.

1. How is the contribution to sustainable development of a CDM project activity demonstrated in your country? Do you recommend or require or use:

- a. a specific approach (e.g. a tool/ process/ analysis/ manual)   
 Is the application obligatory? Yes  No   
 Please describe: \_\_\_\_\_  
 Where available? \_\_\_\_\_  
 To be used by whom?  
 DNA  \_\_\_\_\_  
 Project developer  \_\_\_\_\_  
 Other  Who are "others"? \_\_\_\_\_
- b. CDM specific SD criteria AND/OR requirements   
 Is the application obligatory? Yes  No   
 Please describe: \_\_\_\_\_  
 Where available? \_\_\_\_\_  
 To be used by whom?  
 DNA  \_\_\_\_\_  
 Project developer  \_\_\_\_\_  
 Other  Who are "others"? \_\_\_\_\_



2.C.2. Do you apply this element in your current CDM evaluation process?

Yes  How? \_\_\_\_\_  
No   
Don't know

2.C.3. Do you consider this element useful? (e.g. for project planning, evaluation)

Yes  For whom? \_\_\_\_\_ And why? \_\_\_\_\_  
DNAs  \_\_\_\_\_  
Project developers  \_\_\_\_\_  
Others  \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  \_\_\_\_\_

#### **D. Definition of the goal hierarchy**

2.D.1. Have you personally ever systematically defined the goal hierarchy for a project?

Yes  \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.D.2. Do you apply this element in your current CDM evaluation process?

Yes  How? \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.D.3. Do you consider this element useful? (e.g. for project planning, evaluation)

Yes  For whom? \_\_\_\_\_ And why? \_\_\_\_\_  
DNAs  \_\_\_\_\_  
Project developers  \_\_\_\_\_  
Others  \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  \_\_\_\_\_

#### **E. Definition of activities**

2.E.1. Have you personally ever systematically defined activities for a project?

Yes  \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.E.2. Do you apply this element in your current CDM evaluation process?

Yes  How? \_\_\_\_\_  
No   
Don't know

2.E.3. Do you consider this element useful? (e.g. for project planning, evaluation)

Yes  For whom? \_\_\_\_\_ And why? \_\_\_\_\_  
DNAs  \_\_\_\_\_  
Project developers  \_\_\_\_\_  
Others  \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  \_\_\_\_\_

#### **F. Definition of SMART indicators**

2.F.1. Have you personally ever systematically defined SMART indicators?

Yes  \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.F.2. Do you apply this element in your current CDM evaluation process?

Yes  How? \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.F.3. Do you consider this element useful? (e.g. for project planning, evaluation)

Yes  For whom? \_\_\_\_\_ And why? \_\_\_\_\_  
DNAs  \_\_\_\_\_  
Project developers  \_\_\_\_\_  
Others  \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  \_\_\_\_\_

### **G. Discussion of underlying assumptions**

2.G.1. Have you personally ever systematically discussed underlying assumptions?

Yes  \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.G.2. Do you apply this element in your current CDM evaluation process?

Yes  How? \_\_\_\_\_  
No  \_\_\_\_\_  
Don't know  \_\_\_\_\_

2.G.3. Do you consider this element useful? (e.g. for project planning, evaluation)

Yes  For whom? \_\_\_\_\_ And why? \_\_\_\_\_  
DNAs  \_\_\_\_\_  
Project developers  \_\_\_\_\_  
Others  \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  \_\_\_\_\_

### **Final feedback:**

3. What is your opinion about the Sustainability Management Approach as a whole?

Would you recommend it?

Yes  Why? \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  Why? \_\_\_\_\_

Would you use it?

Yes  Why? \_\_\_\_\_  
No  Why? \_\_\_\_\_  
Don't know  Why? \_\_\_\_\_

Further comments: \_\_\_\_\_

***Thank you very much for your support!***

## 7.2. Information material sent to the DNAs in advance

### REQUEST FOR PARTICIPATION

### DNA-SURVEY ON THE CONTRIBUTION TO SUSTAINABLE DEVELOPMENT OF CDM PROJECT ACTIVITIES

The Clean Development Mechanism (CDM) was designed to achieve two main goals: additional emission reductions and a contribution to sustainable development in the host countries. Detailed information on the calculation of emission reductions is provided in the Project Design Documents, but **no transparent and structured approach is required to demonstrate the contribution to sustainable development**. However, without evaluable information, the CDM risks to fail the sustainable development goal.

The purpose of my PhD research is to analyse how to make CDM project activities evaluable regarding their contribution to sustainable development. I developed the “**Sustainability Management Approach**”, which was applied to **three case studies in Peru** from February 2006 to March 2006 to obtain **feedback from practitioners**. The approach was considered straightforward (no need for external consultancy), widely applicable and compatible with the process of stakeholder consultation which is required for CDM project activities.

In addition to the practitioners' views, the **perception of the Designated National Authorities (DNAs)** is of great relevance for my study. Between **January and February 2007**, a **telephone survey** will be conducted with the DNAs to obtain their feedback on the approach and to collect data on other possible approaches applied in CDM host countries.

I would like to include your points of view into my research. Your feedback is very important, even if there are currently no CDM project activities in your country.

All DNAs who agree to participate in a 20 minutes phone interview will be sent:

- **three informative pages** on the “Sustainability Management Approach” (before the interview)
- **an extensive handbook** on the Sustainability Management Approach (after conclusion of the DNA survey and before publication of the PhD thesis)

The results will be published in the context of my PhD thesis and may be published in scientific research journals or presented at professional conferences. However, your name and identity will not be revealed to anyone and all of the data and information collected from you will remain confidential.

The supervisors of my PhD research are:

- Professor Dr. Georg Meran, Environmental Economics and Economic Policy, Technical University Berlin, Germany
- Professor Dr. Claudia Kemfert, Environmental Economics, Humboldt University Berlin, Germany
- Professor Dr. Stephen Wernet, Department of Public Policy Studies and Center for Organizational Leadership and Renewal, Saint Louis University – School of Social Work, USA

**Please respond to this e-mail by ticking the respective box:**

- Yes, I'll be available for a 20 minutes phone interview.
- No, because I've got no time for a survey.
- No, because I'm the wrong contact person. The right contact person (if known) is:
- No, because I'm not interested in the Sustainability Management Approach.
- Other, please explain:

Thank you for your consideration!

Felicia Müller-Pelzer

In cooperation with the EASY-ECO-Team,  
Research Institute for Managing Sustainability  
Vienna University of Economics and Business Administration  
www.sustainability.at    www.easy-eco.eu



**Please do not cite or circulate without permission of the author.**

## **The Sustainability Management Approach**

The **Sustainability Management Approach (SMA)** is a tool to develop a sustainable development strategy for a project activity. It is a systematic approach to operationalize goals and to clarify planned activities and indicators. The monitored outputs, outcomes and impacts can be used to support feedback processes and to communicate the achievements. Regular audits by external certifiers (e.g. the Designated National Authority and/or a Designated Operational Entity) are facilitated.

The approach consists of the following elements:

### **Context analysis**

**Policy analysis:** International and especially national development priorities are useful in identifying dimensions to be considered when pursuing sustainable development. Relevant legislation has to be taken into account. International priorities are specified in conventions and treaties such as the Rio Convention and the Millennium Development Goals. National priorities are for instance defined by local policies and regulations and, in some countries, guidelines of the Designated National Authority.

**Stakeholder analysis:** Stakeholder groups have different and often conflicting needs, which is why their understanding of sustainable development is likely to differ. Sustainable development has therefore to be analysed from different perspectives. The analysis is conducted along the following questions:

1. Who is affected by the project activity?
2. Who has an interest in the project activity?
3. Who is in a position to effect its adoption or execution?
4. Who has expressed an opinion on the matter?
5. Who, because of their demographic or other characteristics, ought to care about the outcome?

A first stakeholder analysis carried out by the project developer can be based on existing knowledge. Stakeholder groups can be identified in a brainstorming and the project developer can specify the interests and needs of each of the groups from his experience. During this exercise, the project developer has to remember, that not all stakeholders might be represented by organizations. Inhabitants, who are either positively or negatively affected by the project activity, have to be included in the analysis. Later, stakeholders and their needs will be analyzed in greater depth in the context of the stakeholder consultation which is part of the process of the Clean Development Mechanism.

**Definition of resources and inputs:** When planning actions to contribute to sustainable development, the available resources and inputs have to be specified, as they set the frame for the strategy. At the start, it has to be decided whether actions apart from the project activity will be carried out (e.g. a social plan for the area) which would require a certain budget to be specified (e.g. a percentage of the carbon credits the project activity will engender) or whether the implementation of the project activity itself will contribute to sustainable development.

### **Pathway of sustainable development**

**Definition of a goal hierarchy:** The goal hierarchy establishes logic connections between goals and preconditions (i.e. sub-goals). This is to identify what contributes to sustainable development. It depicts the concept the project developer has of sustainability. To construct a goal hierarchy which can lead to a social consensus, the results of the policy analysis and the stakeholder analysis have to be incorporated.

**Definition of activities:** Activities are actions which induce change to reach the goals specified. Each activity contributes to an upper goal, and this goal contributes to achieving a higher goal until the main goal of sustainable development is reached. After having developed the goal hierarchy, the project developer can make out criteria which he can influence. The activities can

**Please do not cite or circulate without permission of the author.**

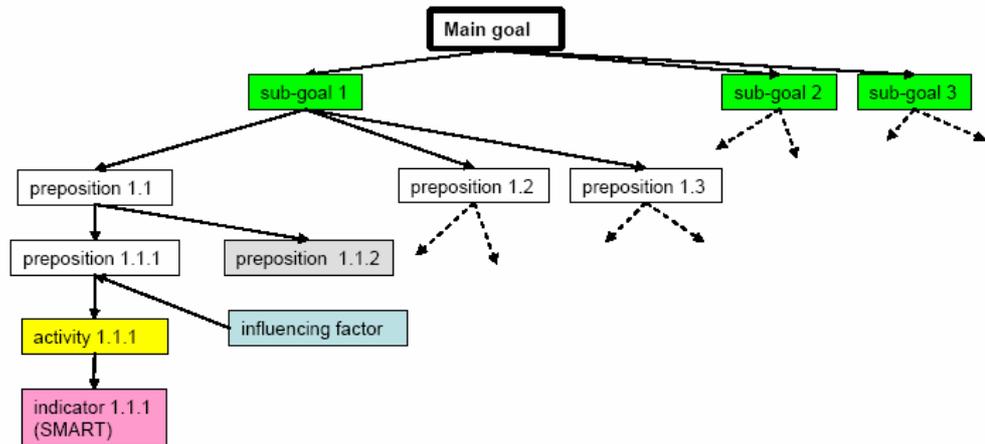
1

Please do not cite or circulate without permission of the author.

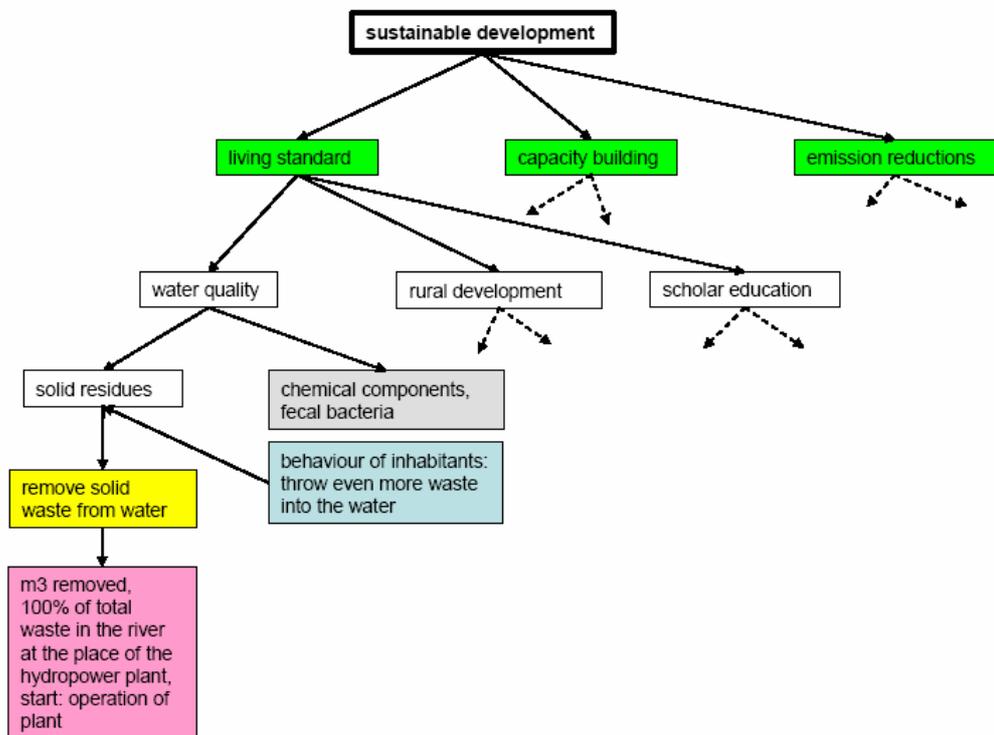
either be an integral part of the project activity (e.g. jobs created) or additional to the project activity (e.g. equipment for local school).

**Definition of indicators:** Indicators have to be developed to demonstrate whether a goal has been achieved or not. The indicators have to be specific, measurable, action-oriented, realistic and timed. Indicators have to be discussed and agreed on with the stakeholders during the consultation process.

*Illustration:*



*Example:*

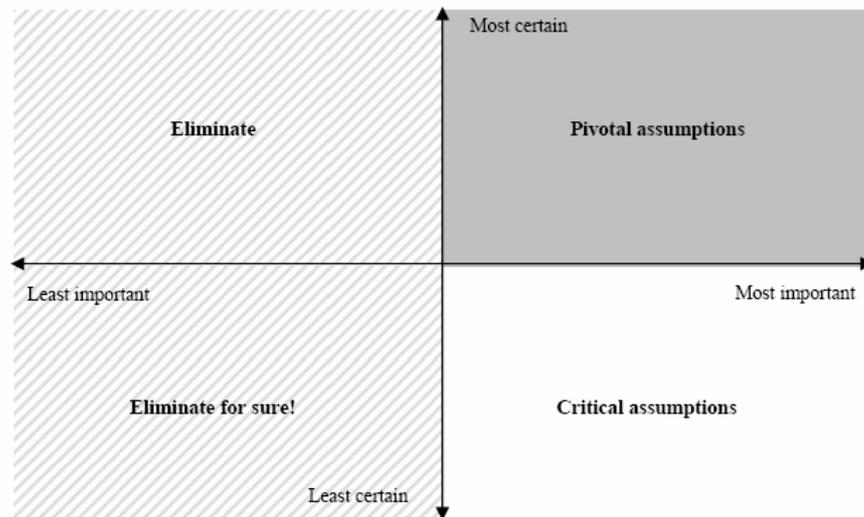


Please do not cite or circulate without permission of the author.

**Please do not cite or circulate without permission of the author.**

**Discussion of underlying assumptions:**

The project developer's strategy to contribute to sustainable development is based on underlying assumptions. It has to be questioned to identify possible gaps, errors and weak points. These are made explicit by using group dynamics in a discursive analysis. At least two groups have to be formed, one supporting and one opposing the planned strategy. The viewpoints should be converging inside the groups and diverging between the groups. The groups are separated to develop assumptions supporting their viewpoints. The assumptions describe how stakeholders will behave. To identify the pivotal assumptions, the assumptions are ranked by each group as illustrated in the following graph.



See Leeuw, F. L. (2003). Reconstructing Program Theories: Methods Available and Problems to be Solved. *American Journal of Evaluation* 24(1): 5-20.

Assumptions of high importance but low certainty can show a strategy's points of weakness. Assumptions of low importance are discarded from the list. Finally, the groups present and defend their strategy basing their argumentation on their pivotal assumptions. The aim is to make all participants understand the argumentations of the other group(s). To achieve consensus, the assumptions are negotiated between the groups which can include the reformulation of assumptions. As a result, a (partial) agreement or disagreement is achieved. If no agreement can be achieved, further steps to overcome these differences have to be undertaken.

**Please do not cite or circulate without permission of the author.**

## 8. DNA survey

### 8.1. Quantitative Results

DNA	Annex I / non-Annex I	Regional group
Albania	non-Annex I	EE
Algeria	non-Annex I	AFR
Antigua and Barbuda	non-Annex I	LAC
Argentina	non-Annex I	LAC
Armenia	non-Annex I	EE
Austria	Annex I	WE and others
Azerbaijan	non-Annex I	EE
Bahamas	non-Annex I	LAC
Bahrain	non-Annex I	ASP
Bangladesh	non-Annex I	ASP
Barbados	non-Annex I	LAC
Belize	non-Annex I	LAC
Benin	non-Annex I	AFR
Bhutan	non-Annex I	ASP
Bolivia	non-Annex I	LAC
Brazil	non-Annex I	LAC
Burkina Faso	non-Annex I	AFR
Cambodia	non-Annex I	ASP
Cameroon	non-Annex I	AFR
Canada	Annex I	WE and others
Chile	non-Annex I	LAC
China	non-Annex I	ASP
Colombia	non-Annex I	LAC
Costa Rica	non-Annex I	LAC
Côte d'Ivoire	non-Annex I	AFR
Cuba	non-Annex I	LAC
Cyprus	non-Annex I	ASP
Democratic Republic of the Congo	non-Annex I	AFR
Denmark	Annex I	WE and others
Dominican Republic	non-Annex I	LAC
Ecuador	non-Annex I	LAC
Egypt	non-Annex I	AFR
El Salvador	non-Annex I	LAC
Equatorial Guinea	non-Annex I	AFR
Ethiopia	non-Annex I	AFR
European Community	Annex I	none
Fiji	non-Annex I	ASP
Finland	Annex I	WE and others
France	Annex I	WE and others
Georgia	non-Annex I	EE
Germany	Annex I	WE and others
Ghana	non-Annex I	AFR
Guatemala	non-Annex I	LAC
Guinea	non-Annex I	AFR
Guyana	non-Annex I	LAC
Honduras	non-Annex I	LAC
India	non-Annex I	ASP
Indonesia	non-Annex I	ASP
Iran	non-Annex I	ASP
Ireland	Annex I	WE and others
Israel	non-Annex I	none
Italy	Annex I	WE and others
Jamaica	non-Annex I	LAC
Japan	Annex I	ASP

Jordan	non-Annex I	ASP
Kenya	non-Annex I	AFR
Kuwait	non-Annex I	ASP
Lao People's Democratic Republic	non-Annex I	ASP
Lebanon	non-Annex I	ASP
Liberia	non-Annex I	AFR
Luxembourg	Annex I	WE and others
Madagascar	non-Annex I	AFR
Malawi	non-Annex I	AFR
Malaysia	non-Annex I	ASP
Maldives	non-Annex I	ASP
Mali	non-Annex I	AFR
Mauritius	non-Annex I	AFR
Mexico	non-Annex I	LAC
Monaco	Annex I	WE and others
Mongolia	non-Annex I	ASP
Morocco	non-Annex I	AFR
Nepal	non-Annex I	ASP
Netherlands	Annex I	WE and others
New Zealand	Annex I	WE and others
Nicaragua	non-Annex I	LAC
Niger	non-Annex I	AFR
Nigeria	non-Annex I	AFR
Norway	Annex I	WE and others
Pakistan	non-Annex I	ASP
Panama	non-Annex I	LAC
Papua New Guinea	non-Annex I	ASP
Paraguay	non-Annex I	LAC
Peru	non-Annex I	LAC
Philippines	non-Annex I	ASP
Portugal	Annex I	WE and others
Qatar	non-Annex I	ASP
Republic of Korea	non-Annex I	ASP
Republic of Moldova	non-Annex I	EE
Rwanda	non-Annex I	AFR
Saint Lucia	non-Annex I	LAC
Senegal	non-Annex I	AFR
Serbia and Montenegro	non-Annex I	EE
Singapore	non-Annex I	ASP
Slovakia	Annex I	EE
Slovenia	Annex I	EE
South Africa	non-Annex I	AFR
Spain	Annex I	WE and others
Sri Lanka	non-Annex I	ASP
Sudan	non-Annex I	AFR
Swaziland	non-Annex I	AFR
Sweden	Annex I	WE and others
Switzerland	Annex I	WE and others
Syrian Arab Republic	non-Annex I	ASP
Thailand	non-Annex I	ASP
The former Yugoslav Republic of Macedonia	non-Annex I	EE
Trinidad and Tobago	non-Annex I	LAC
Tunisia	non-Annex I	AFR
Uganda	non-Annex I	AFR
United Arab Emirates	non-Annex I	ASP
United Kingdom of Great Britain and Northern Ireland	Annex I	WE and others
United Republic of Tanzania	non-Annex I	AFR
Uruguay	non-Annex I	LAC
Uzbekistan	non-Annex I	ASP

Vietnam	non-Annex I	ASP
Yemen	non-Annex I	ASP
Zambia	non-Annex I	AFR
Zimbabwe	non-Annex I	AFR

**Table 1:** DNAs notified to the UNFCCC on 11 January 2007

Region	Does your DNA have a website?		Total
	yes	no	
ASP	15	6	21
AFR	7	13	20
LAC	13	7	20
EE	3	1	4
WE and others	8	5	13
none	1	1	2
<b>Total</b>	<b>47</b>	<b>33</b>	<b>80</b>

**Table 2:** DNAs disposing of a website

Region	All important information provided online?		Total
	yes	no	
ASP	15	6	21
AFR	7	13	20
LAC	12	6	18
EE	3	1	4
WE and others	8	5	13
none	1	1	2
<b>Total</b>	<b>46</b>	<b>32</b>	<b>78</b>
not specified	2		2
<b>Total</b>			<b>80</b>

**Table 3:** Provision of information via the website

Region	Does your DNA have a website?		Total
	yes	no	
<b>There is a website available, but not of the DNA</b>			
ASP	6 (of 15)	0 (of 6)	6 (of 21)
AFR	1 (of 7)	1 (of 13)	2 (of 20)
LAC	0 (of 13)	3 (of 7)	3 (of 20)
WE and others	2 (of 8)	2 (of 5)	4 (of 13)
<b>Total</b>	<b>9 (of 47)</b>	<b>6 (of 33)</b>	<b>15 (of 80)</b>
<b>There is a website available, but not on the CDM</b>			
ASP	1 (of 15)	0 (of 6)	1 (of 21)
AFR	0 (of 7)	1 (of 13)	1 (of 20)
LAC	0 (of 13)	1 (of 7)	1 (of 20)
none	0 (of 1)	1 (of 1)	1 (of 2)
<b>Total</b>	<b>1 (of 47)</b>	<b>3 (of 33)</b>	<b>4 (of 80)</b>
<b>There is no website available but a CDM portal without interaction</b>			
AFR	0 (of 7)	1 (of 13)	1 (of 20)
LAC	0 (of 13)	1 (of 7)	1 (of 20)
<b>Total</b>	<b>0 (of 47)</b>	<b>2 (of 33)</b>	<b>2 (of 80)</b>
<b>Website in process</b>			
ASP	1 (of 15)	4 (of 6)	5 (of 21)
AFR	1 (of 7)	5 (of 13)	6 (of 20)
LAC	1 (of 13)	4 (of 7)	5 (of 20)
WE and others	0 (of 8)	4 (of 5)	4 (of 13)
<b>Total</b>	<b>3 (of 47)</b>	<b>17 (of 33)</b>	<b>20 (of 80)</b>

**Table 4:** Intermediate stages of websites

Regions	Reasons for not disposing of a website					Total
	financial	HR/ capacity	political reasons	only started recently	managerial reasons	
ASP	2	3	0	3	1	<b>9</b>
AFR	10	7	0	3	0	<b>20</b>
LAC	2	3	1	1	1	<b>8</b>
WE and others	0	1	0	1	0	<b>2</b>
EE	0	0	1	0	0	<b>1</b>
none	0	0	0	0	0	<b>0</b>
<b>Total</b>	<b>14</b>	<b>14</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>40</b>

**Table 5:** Reasons for not disposing of a website (number of answers for each reason mentioned)

## 8.2. Comments provided

General comments supporting the SMA are not explicitly mentioned (for details, see Annexe 8), but the crucial issues are emphasized below. Crucial issues are suggestions made by the participants, criticism and anticipation of difficulties, but also positive comments made by participants not opting for a *yes* with regard to the usefulness of an element. For a better overview, the comments made by those not opting for a *yes* (i.e. those opting for *no* or *don't know*) are underlined in the following tables. The comments of the author are printed in italics.

### Element 1 – Policy analysis

Category	No.	Comments
<b>Evaluation</b>	12	One interviewee mentioned that the policy analysis could be used by the DOE for verification of the benefits to sustainable development. This would require the specification of indicators not only for the activities but also for the goals and sub-goals. However, it can be a challenge to prove the influence of a single project activity on changes at the macro level. Another participant mentioned that the policy analysis is useful for attracting investors to the country. Transparency can be a competitive advantage as it facilitates the investor's planning.
<b>Compliance</b>	20	One interviewee pointed out that it was crucial for the usefulness of the policy analysis that non-compliance would not stay without consequences for the project participants.
<b>Project management</b>	24	The policy analysis was generally considered useful for supporting project management.
<b>Contribution to SD</b>	33	It was underlined that the project activities had to match the sustainable development goals. However, one interviewee mentioned that it could be difficult to find adequate projects. One participant said that more integrative approaches were needed. Another interviewee explained that without taking into account the policies, it would be very difficult to define of what sustainable development consisted.
<b>Involvement/ Stakeholders</b>	8	It was pointed out that the involvement of stakeholders and the safeguarding of their interests should be taken into account and that the policy analysis was one means of doing so.
<b>Scope</b>	6	One interviewee pointed out that it had to be clarified how far the policy analysis should go and that it was relevant for all actors in the way it was described in the SMA. Another participant also emphasized that the policy analysis of the SMA was very general but also had to be general as it was just a framework to be adapted to concrete situations. <u>One participant did not consider the policy analysis useful, because s/he considered it too broad for project activities, advocating sustainable development criteria instead.</u> However, it is the responsibility of the DNA to define these. If the DNA has

		carried out a policy analysis and deduced meaningful sustainable development criteria, the project developer might not need to analyze policies even further. But in many cases, criteria are missing or not detailed enough. Another participant pointed out that the policy analysis should not be limited to the CDM context, but should include sustainable development aspects in general. The policy analysis should further show whether the general conditions were good. If not, the policies would have to be reviewed. The participant further explained that such a broader policy analysis might on the other hand be too challenging to the project developers in countries where no sustainable development policies had been specified. In that case, project developers would need funding if they had to carry out a complex policy analysis themselves. <i>However, it is important to note that this understanding of the element of policy analysis goes far beyond the SMA, as it consists rather in a policy review.</i>
<b>Politicized</b>	2	Two participants pointed out that the CDM was not a purely technical topic anymore, but was much politicized.
<b>Transparency</b>	1	One interviewee explained that the DNA requirements regarding sustainable development were often not transparent enough.
<b>Uniform code</b>	1	One participant opted for a worldwide uniform code as guidance to sustainable development, pointing out that this would not mean identical criteria everywhere but a common path. S/he admitted that such a uniform code might be difficult to establish.
<b>The three main actors</b>		
DNAs	17	One participant mentioned that the SMA was a very structured process, but that the real process at the DNAs was not. Another interviewee pointed out that resource restrictions might prevent implementation. <u>There was one Annex I participant who was not sure about the usefulness of Element 1, because Annex I countries did not have to concern themselves with sustainable development.</u>
Project developers	21	Apart from four participants, all the interviewees considered the element useful to project developers. The first of the sceptical participants pointed out that project developers tried to cheat to get the additional financial resources, the second one said project developers pursued their business interest and did not care about other issues, and the third thought this task might be carried out by an independent consultant but that this would only be done if it was an EB requirement, and the last one considered project developers simply not so much involved in policy analysis.
Others	9	One participant pointed out that the stakeholder interests were specific and did not necessarily match the policies. Another participant also underlined the different interests of stakeholders and mentioned that they might be able to achieve a consensus. <i>This could be true, but policies should generally represent a compromise between stakeholder interests. Although the particular stakeholder interest might not match the policies, a policy analysis might be important for them.</i> Another interviewee mentioned that the DOEs might carry out a policy analysis after validation, but that this would be a time-consuming exercise. One participant pointed out that rural people might have difficulties of understanding. <i>In that case, facilitators would be needed, but it should not be an argument against participation.</i>
<b>Other comments</b>	9	Refer to Annexe 8

**Table 40:** Element 1 – Policy analysis

## Element 2 – Stakeholder analysis

Category	No.	Comments
<b>Compliance</b>	10	The stakeholder analysis was considered as a <i>must</i> .
<b>Contribution to SD</b>	10	It was considered necessary to contribute to SD. One interviewee reported that in his/her country, social aspects had been neglected in the past, which was why projects (not CDM) had been stopped.
<b>Represent stakeholders</b>	22	One participant mentioned that the degree of involvement of stakeholders depended on the size of the group, the weight for the decision, their status, among other things. Another participant pointed out that the stakeholders could vary by project and that their representation might turn out quite complex. One interviewee said that the definition of stakeholders was sometimes difficult. Another interviewee pointed out that stakeholders were especially important if they defended an opinion different from that of the developers/the DNA.
<b>Define beneficiaries</b>	7	It should be shown who benefits without putting stakeholders at a disadvantage.
<b>Project management</b>	19	Only two participants said that the stakeholder analysis was not (so much) needed for planning. Planning was an issue for the project developers and not the stakeholders, the country. Nevertheless, the stakeholder analysis was good to develop projects which were more in line with stakeholders needs, but it was not an essential issue.
<b>Acceptance and support</b>	27	The stakeholder analysis was considered useful for reaching acceptance and support, and thereby for reducing the transaction costs of the project.
<b>Involvement</b>	8	One interviewee mentioned that involvement in practice was often not satisfactory.
<b>Responsibility</b>	2	It was pointed out that it was the responsibility of the project developer to involve the stakeholders and that the stakeholder analysis could define the responsibilities with regard to the project activity.
<b>Quality and success</b>	6	It was considered necessary for successful project activities and for quality.
<b>Evaluation</b>	16	It was considered useful for evaluation. One participant pointed out, however, that it was a host country issue and the monitoring depended on the respective methodology.
<b>Insights, transparency</b>	14	The participants underlined the increased transparency and the new insights Element 2 would generate.
<b>The three main actors</b>		
DNAs	9	The participants explained that the DNA had a facilitating function. One interviewee said that in his/her country, the DNA had generally decided who the 5 main stakeholders to involve were. Another interviewee pointed out that the DNA should not only rely on the PDD when approving a project activity. Two participants disclosed that Annex I countries generally did not deal with all stakeholders, that the host DNA assessed the project activity and the Annex I DNA had to believe it. One participant defined stakeholders broader: S/he understood the stakeholder analysis also as a means of choosing the best foreign partners (investors). It was further useful for identifying the main risks concerning the stakeholders. However, sustainability and limited financial resources may become barriers to implementation.
Project developers	16	The participants considered the element useful to project developers. However, three interviewees were slightly sceptical: Project developers followed their own interests

		(money, CERs), did not give this element much attention and had no time for it. Another participant pointed out that the way to involve the stakeholders was generally not described, which may be useful for better structuring the process. <i>There are general handbooks available on stakeholder involvement. In addition, a facilitator with a social-science background and experience with focus groups would be useful.</i>
Others	11	It was considered useful to the stakeholders themselves to get a clear idea and participate actively. One interviewee criticized, however, that in the case of NGOs, it was not always used to the benefit of the project. Projects always caused some environmental harm. NGOs sometimes blocked and thereby prevented the project from qualifying as a CDM project activity. <i>This signifies that the involvement process was not correctly implemented. Further, it is not true that projects always cause a net environmental harm. Maybe this comment already indicates reasons of dissent.</i>
<b>Other comments</b>	14	See Annexe 8

**Table 41:** Element 2 – Stakeholder analysis

### Element 3 – Definition of resources and inputs

<b>Category</b>	<b>No</b>	<b>Comments</b>
<b>Financial aspects</b>	9	Participants emphasized resources and inputs mainly under financial aspects.
<b>Contribution to SD</b>		The element was considered useful for the determination of SD. One participant explained that when one examined SD, one had to go a step further and identify the inputs to bring the intended benefits to fruition. Another participant described his/her concrete case: The country was a small island and resources were vulnerable e.g. to global impacts of climate change. Therefore, one had to make sure that projects were carried out in the most sustainable manner as the resources had to be available today and in future. Another participant underscored that also sustainability had to be economical and resources should therefore be used as efficiently as possible.
<b>Consensus</b>	2	Consensus should be achieved when dealing with SD.
<b>Compliance</b>	5	The clear definition of resources and inputs would facilitate approval.
<b>In general</b>	2	This was a generally important aspect, not just for CDM project activities.
<b>Evaluation</b>	17	It was generally considered useful for evaluation. Two participants did not think it was especially useful for evaluation and another one was not sure but thought it depended on the project owner. One interviewee pointed out that the extent of this element had to be determined (at best until each outcome) and another participant considered it important for statistics ex post.
<b>Predict outputs</b>	5	The element was considered useful for predicting the results.
<b>Project management</b>	23	It was considered to improve the planning. One participant pointed out a difficulty: The CDM was often carried out in parallel with a 'real' project, i.e. only the part referring to the CERs was described in the PDD.
<b>Transparency</b>	11	It was considered important for transparency.
<b>Success</b>	5	To ensure successful project activities, this element was considered useful.

<b>Difficulties/restrictions</b>	8	<p>One participant said that the real benefit of this element had to be known. <i>The benefit would be to avoid over-exploitation of resources and to ensure the success of the planned sustainability strategy.</i> Another interviewee explained that the project activity was done at the risk of the project developer, and that s/he had some difficulties in understanding the purpose of the analysis of resources and inputs from the DNA's point of view. <i>The DNA might have an interest in checking the impacts on resources and the feasibility of the sustainability strategy.</i> Another participant said that s/he had to "think the other way around" to take the view of project developers. <i>This might have been a new constellation to some interviewees.</i> Another participant did not understand the difference between internal activities belonging to the project activity itself and external activities, i.e. additional activities such as a social plan. <i>Internal activities could already be covered by the regular resources and inputs of the project activity, while additional activities may not.</i> One interviewee underlined that only few people were up to date, that there was not sufficient capacity, i.e. HR for the DNA to conduct such an analysis. Another participant raised the point that the time needed should be taken into account, not to brake down/slow the process. Another interviewee raised the cost aspect of the analysis. <i>These are general difficulties for the assessment by the DNA.</i></p> <p><u>A participant who was not sure about the usefulness of this element pointed out that his/her DNA had little experience, that they were still having problems with PINs and PDDs, that they needed expertise, did not know how to develop project activities, the time was very limited, and they would need more people to work on this topic.</u></p>
<b>The three main actors</b>		
DNAs	14	<p>It was generally considered useful to DNAs, some considering the DNA rather as a facilitator and some more as an evaluator. One participant was not sure whether the element was useful to the DNA, how it could fit into the consultation process of the Committee. As mentioned above, one participant had some difficulties in understanding the purpose of the analysis of resources and inputs from the point of view of the DNA. <u>There was one Annex I participant who was not sure about the usefulness of Element 1 because Annex I countries did not have to concern themselves with sustainable development.</u></p>
Project developers	21	<p>It was considered relevant for project developers as they were carrying the project risk. One participant did not think that project developers took so many issues for SD into account although s/he thought it was necessary and another one said that project developers were only interested in business. One participant explained that this element was de facto applied by the project developers, as they wanted to meet their break-even. <i>This comment shows the financial understanding of this element by the interviewee.</i> One participant criticized that proposals covered rather the technical part, which was often the easiest to define, and that hopefully the project developers defined their resources and inputs themselves. Another interviewee considered the element important for developers as they risked to be driven by their enthusiasm.</p>
Others		<p>The element was considered useful e.g. to stakeholders, DOEs as well as to foreign and national partners. Two participants did not consider the element very relevant for others, the first because the process was only being</p>

		established in his/her country and the second one because others were not directly involved in these questions.
<b>Other comments</b>		See Annexe 8

**Table 42:** Element 3 – Definition of resources and inputs

#### Element 4 – Definition of a goal hierarchy

<b>Category</b>	<b>No.</b>	<b>Comments</b>
<b>Compliance</b>	5	It was considered useful for smooth approval.
<b>Systematic</b>	7	It was recognized as a systematic approach which helped to structure the project activity.
<b>Link to other elements</b>	4	It was pointed out that the goal hierarchy should be linked to the policies, the activities and the indicators.
<b>Contribution to SD</b>	9	A goal hierarchy could ensure the collective preferences are reflected and that SD is actually achieved.
<b>Evaluation</b>	28	It was considered useful for evaluation, to follow up. One participant clarified that it depended on the approach of the DNAs and that it was not applicable in his/her country because there was already an approach established.
<b>Project management</b>	31	It was considered useful for project planning/management. <u>One participant thought the element was not useful as it was a bit too ambitious and should not be part of project planning, but should be specified top-down by the DNA instead. The project activity had then to match this goal hierarchy. This comment reflects a strong top-down approach which promotes a compliance mentality among the project developers.</u>
<b>Prioritization</b>	15	The goal hierarchy was understood as a means of prioritization and dealing with trade-offs. One participant did not know whether the element was useful. S/he thought that it would be helpful if there was a capacity or resource restriction and priorities had to be set. But in his/her country, it was not necessary as project activities were needed in all areas and there was no need to focus. <i>This is, however, a misunderstanding of the term goal hierarchy. It does not necessarily mean that one goal is considered more important than another one. It basically illustrates the goal tree of main goals and sub-goals, i.e. it operationalizes SD.</i>
<b>Success/ quality</b>	5	The element was considered supporting the successful realization of project activities.
<b>Transparency</b>	16	The element provided transparency, helped to communicate concepts and promoted understanding.
<b>Consensus</b>	2	It was considered useful for arriving at a common definition.
<b>Difficulties</b>	5	One participant found the element useful but underlined that the goal hierarchy had to be adapted to the type of projects, e.g. the weighting of the goals could vary. <i>This is true – SD is project specific. Therefore, the SMA does not propose concrete goals, but a procedure for how to develop them.</i> One participant pointed out that sub-goals might be difficult to develop in practice, one might sometimes not follow exactly the proposed scheme. The goals should be achievable and practicable. <i>Sub-goals can be difficult to develop if the concepts are not clear. However, it is recommendable to go through this exercise because otherwise, it is likely that goals are missed and that sustainability stays lip serve.</i> Another participant underlined that to develop such a hierarchy, resources, skills, expertise, and very professional staff would be needed. <i>This would be helpful, but sustainable development can be defined by everybody, it is not an issue which can only be dealt with by scientists. The important point is that the process is participatory.</i> A limitation to evaluation

		<p>was identified by one interviewee: The CDM did not allow for ex-post evaluation. Once the letter of approval had been issued, the DNA had no more means to intervene. <i>This is a legal problem, but it could be resolved by the DNAs as they can set the rules. For instance, they could specify procedures in case of non-compliance detected ex post.</i></p> <p><u>One interviewee, who did not know whether the element was useful, explained that, first, host country requirements should be specified; second, buyers should get involved to impose their minimal criteria, e.g. approval criteria of donors. There was no internationally agreed definition of sustainable development. When developing a goal hierarchy, project developers could miss the abstraction level, not knowing the 'jargon' of sustainable development. This could be recognized as a barrier by project developers. Therefore, guidance from the DNA would be helpful, what goal hierarchies could look like and where to find information. In addition, case studies of CDM project activities could further illustrate this element.</u></p>
<b>General</b>	2	<p>One participant pointed out that this element was not CDM specific. <i>This was not the aim of the SMA. It was the aim to develop an approach suitable for CDM project activities, not exclusive to CDM project activities.</i> <u>The other participant opted for a 'don't know' as s/he considered the element in general useful but did not know whether it was so for the CDM because the DNA has not yet thought about a goal hierarchy.</u></p>
<b>The three main actors</b>		
DNAs	13	<p>It was considered useful to the DNAs, whose function was to facilitate and to evaluate. One participant pointed out that the DNA's activities were limited to checking their criteria and signing the approval letter. Another participant said that the DNAs had to check whether the stakeholders were represented. One interviewee explained that the DNA would only veto if a law was violated. <u>The participant who considered the element not useful said – as mentioned above – that the goal hierarchy should be specified top-down by the DNA instead. The project activity had then to match this goal hierarchy. There was the Annex I participant who was again not sure about the usefulness of Element 4 because Annex I countries did not have to concern themselves with sustainable development.</u></p>
Project developers	19	<p>It was considered useful to project developers because it helped them to implement the strategy and to be compliant. One participant was not sure whether it was useful to project developers because s/he did not know their goals. <i>This is exactly the deficiency – the project developers do not clarify their concepts.</i> Another participant pointed out that the goals of the project developers were not necessarily conform with the country goals, which is why their hierarchy could be anything. <i>This is true if there is no participation of stakeholders. However, with stakeholder involvement and the need to obtain DNA approval, there are chances for consensus.</i> One participant explained that the DNA would have to demand this goal hierarchy from the project developers. Another aspect which might be positive for project developers was mentioned by another participant: If stakeholders were involved in the development of the goal hierarchy, responsibilities might also be shifted to them, reducing the project risk carried by the developers. <u>The participant who was not sure whether the element was useful explained that to project developers, the project activity had to be economically sustainable, this was indeed important to them.</u></p>
Others	17	<p>It was generally considered useful although the degree of</p>

		usefulness could vary from stakeholder to stakeholder, as one interviewee mentioned. Three participants thought that others pursued different interests. <i>Actually, these should be somehow reflected in the goal hierarchy (consensus!) to achieve sustainable development.</i> One of the three mentioned that they might not be interested in the entire picture. This is something that should be examined in practice because it might be different.
<b>Other comments</b>	9	See Annexe 8

**Table 43:** Element 4 – Definition of a goal hierarchy

## Element 5 – Definition of activities

<b>Category</b>	<b>No.</b>	<b>Comments</b>
<b>Contribute to SD</b>	2	The clear definition of the activities was considered useful for ensuring the contribution to SD.
<b>Compliance</b>	9	It was considered necessary for compliance and thereby for approval. One participant said that the by-products, extra benefits apart from the ERs had to be shown because the EB had to approve the project activity. <i>This is, however, a misunderstanding of the function of the EB: The EB does not deal with sustainability aspects. This is a host country issue.</i>
<b>Consensus</b>	3	The activities should reflect the societal consensus.
<b>Transparency</b>	20	This element improved transparency and increased understanding. One participant mentioned that this should be part of the project proposal accessible to all stakeholders.
<b>Involvement</b>	1	Experts should get involved.
<b>Evaluation</b>	32	It was considered useful for evaluation. One participant recalled that there was even a section in the PDD reserved for this information. One participant mentioned, however, that the assessment might turn out difficult. Another one underlined that the element was less useful for evaluation because of the composition of the evaluating team: It could not evaluate all kinds of activities. But the element could be useful if the evaluation used scientifically based criteria (but this was not very common at the DNAs). <u>Another participant, who was not sure whether the element was useful, clarified that his/her DNA did not ask for this clear definition of activities. If it did, it also had to check the outcome, which would require a lot of activities and resources. This depends on the aspirations of the DNA. It could simply check whether the project developer complies with his self-set goals, or go further assessing the contribution to higher SD goals.</u>
<b>Project management</b>	32	The element was generally considered useful for project management.
<b>Link to other elements</b>	13	The link of the activities to the governmental strategy, the local development, the resources, the goals, the indicators, the outputs and the underlying assumptions was established by the interviewees.
<b>Success</b>	10	The element was considered helpful to reach the goals.
<b>Difficulties</b>	4	One participant emphasized that the tool should not limit the project activity. As the SMA leaves the content open, this should not be problematic. Another participant <i>(as already mentioned under evaluation)</i> pointed out that the assessment might be difficult. The fact that the DOEs were not accredited for SD issues was identified as a shortcoming by another interviewee. <i>This is indeed a drawback. Nevertheless, they could be a host country accreditation for SD topics, if wished.</i> <u>Another participant (as already mentioned under evaluation) said that the DNA had to check the outcome if it assessed this</u>

		<u>element, but this would require a lot of activities and resources.</u>
<b>The three main actors</b>		
DNAs	16	The element was generally considered useful. One participant criticized that after the letter of approval there was no monitoring of SD. Another one said that the DNA was no more involved in assessing these aspects. A third interviewee explained that it might be time consuming. <u>The same Annex I participant as above was again not sure about the usefulness of Element 5 because Annex I countries did not have to concern themselves with sustainable development.</u> The other participant, already mentioned twice above, said that the DNA had to check the outcome if it assessed this element.
Project developers	18	The element was considered useful to project developers. One participant mentioned that developers would not go for implementation without defining activities. <i>This is, however, a very optimistic attitude with regard to SD (or pessimistic, i.e. nothing will be done).</i> Another participant considered the element important for developers who had proposed additional SD activities. <i>Maybe, however, even if the activities are part of the project activity, it cannot be taken for granted that the SD concept is well explained.</i>
Others	18	The element was generally considered also useful to others. However, one participant said that it was not so important, because others were mainly interested in whether the project activity was up and running and within the governmental goals. Nevertheless, the element was important for transparency and the improvement of the relation among the stakeholders. A drawback pointed out by one interviewee already mentioned above: The DOEs are not accredited for SD.
<b>Other comments</b>	7	One participant explained that this element would be useful for programmatic CDM as regards sub-activities. <i>However, these are not the sub-activities meant in the SMA. The SD activities can be part of the CDM project activity or can be additional activities, such as the implementation of a social investment plan.</i> For further comments see Annexe 8

**Table 44:** Element 5 – Definition of activities

## Element 6 – Definition of SMART indicators

<b>Category</b>	<b>No.</b>	<b>Comments</b>
<b>Evaluation</b>	52	This element was recognized as useful for evaluation by many participants. One participant underlined that this could become a complex exercise. <i>It is important that the goal hierarchy is kept clear and simple.</i> Another interviewee said that SD was a broad concept and hard to measure. <i>The definition of indicators is a challenge and should be participatory for this reason.</i> Another participant explained that the project developers did not have to define the indicators because they were provided by the DNA and could be further adjusted to the project activity. <u>Even an interviewee who was not sure about the usefulness of this element pointed out that it might be good for evaluation because without indicators, no progress evaluation would be possible to meet the goals on time.</u>
<b>Project management</b>	27	The element was generally considered useful for project management. One participant did not consider it so useful for planning.
<b>Transparency and proof</b>	3	It was considered useful for proving the achievements.
<b>Success</b>	10	It was considered useful for ensuring project success.
<b>Structure</b>	3	It was considered useful because of providing a clear structure.

<b>Link to other elements</b>	5	The links to the goals were established by the interviewees.
<b>Involvement</b>	1	The definition of indicators merited participation and commitment of experts.
<b>Financing</b>	1	The indicators were also considered important to ensure the financing of the project activity.
<b>Compliance</b>	1	For project approval, the indicators were considered important.
<b>Difficulties</b>	6	<p>One interviewee mentioned that the approach could sometimes be too structured and complicated. Indicators would not be comparable between project activities, at least not for quantification, but good to clarify the picture. There was a danger of trying to maximize the output. The indicators had to be adapted to reality. Another participant pointed out that the indicators should be realistic. <i>This is a requirement of the SMART indicators.</i> The practicality of an ex-post analysis might be limited, according to another participant, as the effort would be too great. The value of indicators in general would have to be questioned. It depended on the level of detail of the analysis. A simple approach could be superior to the analytical/theoretical approach. SMART might be too theoretical. <i>The author is of the same opinion with regard to the need to keep the approach simple and straightforward. However, the author is convinced that the criteria SMART are minimum criteria for good indicators.</i> Another participant pointed out that it was not so easy to develop SD indicators, to quantify aspects. <i>This is true, good indicators are a challenge, which is why a participatory process is recommendable.</i> Another participant explained that it depended on how deep the project developers were willing to go into the process. Perhaps they would need a consultant. Sometimes, a simple structure was more convenient. <i>This is exactly what the SMA should deliver: a simple and clear illustration of the strategy. A consultant may be helpful, but the company should clarify its concepts and not copy the one developed by a consultant.</i> Another participant mentioned that measurement is difficult with regard to SD.</p>
<b>The three main actors</b>		
<b>DNAs</b>	14	The element was generally considered useful to the DNAs. One interviewee said that Annex I DNAs were rather interested in the ERs, but for host DNAs, it could be relevant. Another participant underlined that the definition of indicators was not the responsibility of the DNAs. Another interviewee went further: The usefulness would be limited for DNAs due to their role. They had just to check the EIA. <i>This is a decision of the host country – how to deal with it. The same Annex I participant as above was again not sure about the usefulness of Element 6 because Annex I countries did not have to concern themselves with sustainable development.</i>
<b>Project developers</b>	12	The element was generally considered relevant for project developers. One interviewee said that so far only 50% of the project developers have understood their responsibility. Another participant said they were only interested in the CERs and two others that developers had their own goals and timelines. One participant criticized that under current practice the developers did not make any efforts to simplify the description of the SD benefits. They provided vague verbal indications such as <i>less steam</i> . A matrix would be better.
<b>Others</b>	15	The element was generally considered relevant for others for participation and transparency. One participant did not think that others referred to indicators as they judged by tangible aspects. Another interviewee was not sure about the relevance as others might have different backgrounds. One interviewee

		differentiated between the investors for whom the indicators were quite relevant and other stakeholders for whom the indicators were only indirectly relevant. This depends on the type of indicators. <i>There might be indicators only indirectly relevant for the investors, but of high relevance for other stakeholders, e.g. the local distribution of benefits.</i> Finally, a participant mentioned that the DOE looked at ERs and not at SD. <i>This depended, however, on the monitoring protocol. If SD aspects are included, they have to be checked by the DOE.</i>
<b>Other comments</b>	10	Some participants explained that they had difficulties in judging upon the usefulness of SMART indicators because they had no experience with them. <u>One participant therefore chose the <i>don't know</i> option. Another one who chose <i>don't know</i> explained that the usefulness depended on the indicators and how they were established. There was a danger that SD was expressed in 'numbers' only and thus lost meaning.</u> For more information, see Annexe 8.

**Table 45:** Element 6 – Definition of SMART indicators

## Element 7 – Discussion of underlying assumptions

<b>Category</b>	<b>No.</b>	<b>Comments</b>
<b>General</b>	2	One participant criticized that this element was not new. The other interviewee found it positive that it was applicable for all projects
<b>Questioning</b>	1	One participant said it was good that the basics were questioned.
<b>Compliance</b>	2	It was mentioned that it helped the approval process and prevent conflicts.
<b>Pluralism</b>	5	The element ensured more equilibrated results. One participant pointed out that the PDD included a public consultation. <i>However, the reality of the public consultations is not comparable with what the SMA requests. The consultations aim at consensus, while the SMA explicitly helps reveal divergent views.</i>
<b>Consensus</b>	11	The participants thought that the element promoted consensus. One participant, however, mentioned that the element sounded like a confrontational approach and wondered what the value was for evaluation. <i>It is important to allow non-agreement to detect gaps and weaknesses in a strategy. This is also the reason why one participant did not consider the element useful, as it could create dissent. The element should mainly be applied internally to question the strategy to make it waterproof. It can also be used with the DNA if the relationship with the project developers is good. Whether it is appropriate to use it with stakeholders has to be decided in the concrete case.</i>
<b>Focus</b>	1	It was pointed out that it helped to discard minor issues.
<b>Structure</b>	3	It was considered useful for structuring the ideas.
<b>Understanding</b>	12	It was considered useful for enhancing understanding.
<b>Link to other elements</b>	1	It was considered as the basis for the definition of activities.
<b>Risks</b>	13	It was considered useful for reducing risk, identifying gaps and preventing failure and conflicts.
<b>Good scenarios/quality</b>	15	It ensures the development of adequate scenarios, solid decision-making and increases the probability of successful results.
<b>Involvement</b>	9	The element was considered as a means of promoting involvement. It could be used during stakeholder consultation. However, it should be carefully used (facilitator needed) or not used in that way at all if there are open

		conflicts among stakeholders as well as stakeholders and the company. As mentioned above, one participant did not consider the element useful as it could create dissent.
<b>Evaluation</b>	17	It was considered as a means of corroborating evaluation. One participant mentioned the restricted capacities to implement this element. <i>However, the element could be used during the existing procedural steps. Not much capacity would be needed to implement it.</i> Another participant explained that this discussion could also have impacts on the policy of the country. Another participant did not think it was so important for evaluation without providing further explanation.
<b>Project management</b>	18	It was considered important for sound planning.
<b>Transparency</b>	3	It was considered useful for clarification and transparency.
<b>Difficulties</b>	13	One participant pointed out that this procedure could be too complex as the results were more detailed than could be reflected in a graph. <i>This is true, the graph which illustrates the relevance and certainty of the assumptions is not sufficient to understand the project activity. However, the author does not think that the procedure is too complex as it worked well during the case studies.</i> Another participant pointed out that some countries may have difficulties with such a discursive approach due to their political past (e.g. the Soviet Union), because the people are used to a top-down structure. <i>This is indeed a challenge. It would have to be tested in practice whether/how (maybe in an adapted way) this element is applicable under such conditions.</i> Another interviewee pointed out that this step required a lot of education to involve people, and that rural population could be more difficult to involve. <i>This might be more challenging, however, an educated facilitator would do, who could translate the ideas into the language which is understandable to all stakeholders.</i> Another participant underlined that an analysis of trade-offs was missing. <i>Trade-offs are usually discussed during the use of this last element, however, they are not included mathematically. This could be done if the developers or the DNA decided to apply an MCA.</i> Another interviewee pointed out that the conservative private sector would not be interested in publishing this information. <i>They actually would not have to publish internally discussed information, but they would also be accountable for the strategy they develop.</i> Another participant underlined that one might touch very sensitive political data, which may not be convenient. Together with stakeholders, the use of this element could become difficult for a company. This is a point commented already above. One interviewee wondered whether such an approach would also work with a pig farm owner. <i>The question here would be who the project developer is. If the pig farm owner is able to develop a CDM project activity himself, he would also be able to use the SMA (which does not have to be complex if not necessary).</i> As mentioned and commented above, one participant thought it was a confrontational approach. S/he further said that the element was quite complex and required a good understanding of participants, questioning the applicability. It would further require time, collection of results and a facilitator. <i>A facilitator would be useful. However, the time needed is not a strong barrier as the concepts can be clarified in some hours only. The overall applicability in the case studies conducted was given.</i> Another participant pointed out that it was difficult to set the priorities of the assumptions. The outcome would be rather subjective. <i>This</i>

		<p>is a general issue when dealing with SD: The outcomes are always subjective. This is why a participatory approach is so important to create consensus. Four participants who said that they did not consider this element useful provided comments. The first thought the element was very theoretical. <i>The element describes a group process which is very pragmatic.</i> The second one wondered whether it was too ambitious and what the results could look like. <i>It would be too ambitious in a big group, but in a small focus group, it is applicable. Examples are provided by the three case studies of this thesis.</i> The third pointed out that it could create dissent and would take too much time. <i>Comments regarding possible dissent were provided above. It would only take some hours to clarify the basic concepts. Of course, it is understood as a revolving tool because concepts and conditions change, but this is also known from strategic management in general.</i> The last one said he could not see the utility of this element, how it would change anything. <i>The case studies of this thesis provide examples for what could change.</i></p>
<b>The three main actors</b>		
DNAs	8	Four participants said that the DNA was not involved in this process; <u>one of them did not know whether the element was useful at all.</u> However, four interviewees considered it important for the DNA, especially in the host country.
Project developers	15	More than two-thirds of those who made a comment regarding the usefulness to project developers were convinced of the element. One participant explained that a similar approach was used when the project developer had to defend his project idea in front of the DNA. Another participant did not know whether this element was useful to the developers, as the DNA was not much involved in this process. As mentioned and commented above, one interviewee said that the private section might not want to publish the results of such a discussion. Another interviewee mentioned that inside the company, there would not be any problems, but together with the stakeholders, it could become touchy. Once participant raised the issue of the pig farm owner discussed above.
Others	10	The element was considered to promote involvement. One participant mentioned that they used a roundtable discussion of experts representing stakeholders. Another interviewee said it might also be interesting for food managers. As mentioned and commented above, one participant wondered whether rural people could easily join the discussion. Another participant doubted that others might be interested in it, as they were only interested in the impacts. However, this is exactly what is discussed with the help of this element. One participant mentioned that others would do what the DNA required. <i>It is not clear how s/he arrived at this idea. A true stakeholder involvement should not be influenced in that way by the DNA.</i>
<b>Other comments</b>	10	One participant mentioned that this element was important, but not as important as the others were because the country would mainly replicate successful project activities. <i>This shows that the participant thinks that this would make a discussion of SD aspects obsolete, which is not the case as each project context can be different. Maybe the DNA of this country still focuses very much on technical/environmental aspects.</i> Another participant was very enthusiastic about the element and announced that he would like to implement it sooner rather than later. Another interviewee said that the importance of this element might vary by project type, but should be analyzed in any case. One participant thought it

		might be useful for rather vague project activities. <u>Three interviewees who were not sure about the usefulness of the element provided comments: The first two said they had no experience with the element and therefore could not estimate the impacts. The third said it was perhaps too complicated and the DNA would not think as systematically as shown in the chart (classifying the assumptions along their importance and certainty).</u>
--	--	--

**Table 46:** Element 7 – Discussion of underlying assumptions

## Recommend the SMA

Category	No.	Comments
<b>Test it first</b>	3	Test it first in practice ( <u>one of the interviewees opted for the <i>don't know</i> option</u> ).
<b>More details</b>	7	More details regarding the SMA were requested ( <u>three of the interviewees opted for the <i>don't know</i> option and one for the <i>no</i> option</u> ).
<b>Political decision</b>	2	Yes, if it was officially required, i.e. if the UNFCCC secretariat made a decision, one interviewee said. <i>It is unlikely that the UNFCCC secretariat will take such a decision, as this is a host country issue.</i> The other interviewee opted for the <i>don't know</i> option. S/he would recommend the SMA if it was a <u>political decision, admitting that the approach seemed interesting and comprehensive.</u>
<b>Applicability</b>	8	The interviewees would recommend the SMA if applicable in practice. <u>One of them opted for the <i>don't know</i> option.</u>
<b>Adapt</b>	7	It was pointed out that the SMA should be applied country-by-country in order to adapt it to the concrete conditions of each country. Modifications should be made, if needed. <u>One of the interviewees opted for the <i>don't know</i> option.</u>
<b>Simplify</b>	3	Two interviewees asked for a more simplified approach and clear indications of dos and don'ts. One of them considered it already simple enough and well consolidated.
<b>Quality</b>	2	They pointed out that the approach led to better projects contributing to sustainable development.
<b>Risks</b>	2	They stated that the SMA helped to reduce project risk.
<b>Transparency</b>	2	The SMA increased transparency.
<b>Structure</b>	11	The interviewees underlined that the SMA helped to structure the ideas and to establish a logic flow. One participant mentioned that the last element was particularly new and seemed to add much value to the process. <u>One of them opted for the <i>don't know</i> option.</u>
<b>Guidance</b>	14	It was stressed that the SMA provided the needed guidance on how to proceed to demonstrate the contribution to sustainable development and to analyze the project activity systematically. <u>One of the participants opted for the <i>don't know</i> option.</u>
<b>Stakeholders</b>	3	It was pointed out that the SMA helped to involve/represent the stakeholders. <u>One of the interviewees opted for the <i>don't know</i> option.</u>
<b>Comprehensive</b>	7	It was stressed that the SMA was comprehensive.
<b>Annex I</b>	3	Two interviewees said that the assessment of the contribution to sustainable development was not the task of the Annex I countries ( <u>out of which one participant opted for the <i>don't know</i> option</u> ). By contrast, the third participant stated that the sustainability check should not be left completely to the non-Annex I countries.
<b>One option</b>	3	These three participants pointed out that the SMA was one option to demonstrate and assess the contribution to sustainable development. <u>The participant who opted for the</u>

		<u>don't know</u> option further asked for the final product and the added value of the SMA. <i>The final product would be a sound (discussed/questioned) sustainability management strategy based on stakeholder consensus and consisting of a goal hierarchy, activities to achieve the goals and indicators to monitor the achievements. This is the fundament to analyze the cause-effect relationships and finally, to definitely contribute to sustainable development in the country.</i>
<b>General</b>	5	Three participants considered the SMA too general (out of which one opted for the <u>don't know</u> and the other one for the <u>no option</u> ), one very specific and the last one useful, even in general. The participant who chose <u>don't know</u> did not understand how the approach could help to develop SD criteria. <i>The corresponding elements to develop criteria are mainly Elements 4, 1 and 2.</i> The participant opting for <u>no</u> further explained that the industry of his/her Annex I country did not need such an approach. <i>The SMA was above all developed for project developers in non-Annex I countries, but those from Annex I countries, if really involved in the project activity and not purely investing money in it, would also be the target group of this approach as the requirement is to contribute to the sustainable development of the host country. In case there was an assessment applied in the respective host country, the SMA could be useful to the Annex I project developer, even if he was not ethically motivated.</i>
<b>Effort</b>	4	It was underlined that the effort required to apply the SMA should be kept as small as possible, the approach should not become too complex and that the details of implementation might provoke more work than anticipated. <i>If the strategy is kept neat, it will also be easier to steer the project activity. The more is not the better.</i> The participant who opted for the <u>no option</u> explained that the time component was crucial in the process.
<b>Methods</b>	1	The participant opted for the <u>don't know</u> option: S/he commented that the application of marginal logic would result in difficulties. Nevertheless, a quantitative method would be desirable for the host countries to measure utility. If the SMA was applied in a repetitive way, the diverse preferences could be reflected in more detail, and then there would be no difficulties. <i>This argumentation is understandable as quantification suggests objectivity, but the participant correctly recognized the effort which would be needed to implement such an approach.</i>
<b>To whom</b>	5	The approach was considered useful, some emphasizing project developers and others the DNAs.
<b>Other comments</b>	25	Three of these comments were provided by participants who opted for the <u>don't know</u> option. One of them was included in this category because s/he did not want to provide an opinion on this question. Another one explained that the DNA worked with a different approach and the SMA addressed the problem differently. The third participant said that s/he maybe would recommend the approach, but would first like to ask for feedback from all team members and from stakeholders. For the other comments, refer to Annexe 8.

**Table 48:** Recommend the SMA

### Use the SMA

Category	No.	Comments
<b>Test it first</b>	4	Test it first in practice (two of the interviewees opted for

		<u>the don't know option</u> ).
<b>More information</b>	6	The participants asked for concrete examples and how this would match the SD criteria of the country. <u>Four of them opted for the don't know option. This information is provided by the Peruvian case studies of this PhD research.</u>
<b>Input for proceedings</b>	1	The participant stated that the SMA would very probably be used as input for the new DNA proceedings.
<b>Political decision</b>	5	The interviewees pointed out that this would be a political decision. <u>Two of the interviewees opted for the don't know option due to this reason.</u> The interviewee cited in the table above said that it would be useful if the UNFCCC secretariat decided upon this issue.
<b>Applicability</b>	3	The applicability in practice was stressed. <u>One of them opted for the don't know option because the SMA would be used if it was efficient in practice.</u>
<b>Adapt</b>	3	The interviewees pointed out that the SMA would (maybe) need to be adapted.
<b>Simplified</b>	4	The participants declared that the SMA would have to be further simplified. <u>Two of them opted for the don't know option.</u>
<b>Comprehensive</b>	4	The SMA was considered comprehensive.
<b>Quality</b>	1	The SMA was seen as a means of promoting good project activities.
<b>Risks</b>	2	The SMA was recognized as a means of preventing risks.
<b>Structure</b>	4	The interviewees underlined again that the SMA helped to structure the ideas and to establish a logic flow. One participant mentioned that Element 7, in particular, was new and seemed to add much value to the process.
<b>Voluntary</b>	1	The participant pointed out that the SMA should stay a voluntary approach.
<b>Guidance</b>	9	It was stressed that the SMA provided the needed guidance on how to proceed to demonstrate the contribution to sustainable development and to analyze the project activity systematically. <u>One of the participants opted for the don't know option, stressing that as a project developer s/he would use it as a point of reference but not as a DNA.</u>
<b>Stakeholders</b>	2	Stakeholder involvement was stressed.
<b>General</b>	3	The three participants pointed to the general character of the SMA as an advantage, <u>one of the DNAs opting for the don't know option.</u>
<b>Too academic</b>	1	The interviewee considered the approach as too academic.
<b>Partly</b>	4	The SMA could also be partly applied.
<b>Already applied (compare with other responses)</b>	5	The participants thought that the SMA was already (maybe/partly) applied. <u>Three of them opted for the don't know option.</u>
<b>Not in this country</b>	1	The interviewee mentioned that a different approach was applied in the country.
<b>Effort</b>	5	As for the last question above, it was underlined that the effort required to apply the SMA should be kept as small as possible, the approach should not become too complex and that the details of implementation might provoke more work than anticipated. <u>The participant who opted for the don't know option asked how much time would have to be assigned for the use of the SMA. The three case studies in Peru illustrate that a first rough structure can be developed in three meetings and that the further definition of resources and indicators can be done accompanying the process of project design and</u>

		<i>implementation.</i>
<b>Differentiation</b>	1	The participant wondered whether different project types would have different implications regarding the SMA. <i>Definitely, different project types will lead to different sustainability strategies. However, the steps of the SMA will remain the same, as they are very standardized.</i>
<b>Annex I</b>	8	Seven interviewees said that the assessment of the contribution to sustainable development was not the task of the Annex I countries ( <u>out of which six participants opted for the no option and one for the don't know option</u> ). By contrast, the last participant stated that the sustainability check should not be left completely to the non-Annex I countries.
<b>Transparency</b>	1	The SMA increased transparency.
<b>Addition</b>	2	Possible additions to the SMA were proposed by two interviewees: One proposed an element dedicated to the responsibility of the project developer covering anti-corruption measures, and the other pointed out that the approach should be translated into French because otherwise it would not be read in some African countries.
<b>Other comments</b>	22	<u>One of the other comments was provided by a participant who opted for the don't know option. S/he wanted to ask for feedback from all team members and from stakeholders.</u> For the other comments, refer to Annexe 8.

**Table 49:** Use the SMA

#### Further comments and feedback

Category	No.	Comments
<b>Nothing new</b>	1	One participant pointed out that the SMA was nothing new. <i>It was not the aim of this research to create "something new", but to identify the elements which can be applied by the project developers themselves and which are necessary to demonstrate the contribution to sustainable development of a CDM project activity.</i>
<b>Applicability</b>	2	The SMA was considered applicable.
Voluntary?	6	One participant thought that the SMA could be generally prescribed. The others pointed out the differences in application and that it should be voluntary.
Simplify	2	Further simplification was requested (e.g. regarding the SMART indicators and the discussion of underlying assumptions).
Effort	6	The effort involved in the implementation of the SMA was pointed out. The time needed for the discussion of underlying assumptions was a topic again. <u>Four of the participants had not answered at least one of the two preceding questions with yes.</u>
In practice/ examples	9	The SMA would have to be tested in practice, and examples (e.g. <i>the Peruvian case studies</i> ) would further clarify the approach. <u>Three of the participants had not answered at least one of the two preceding questions with yes.</u>
Comprehensive	13	The SMA was considered comprehensive and no gaps were detected.
<b>One option</b>	2	The SMA was one of the options to consider. <u>One of the participants had not answered at least one of the two preceding questions with yes.</u>
<b>Current practice</b>	9	The SMA was generally considered to match current practice and to fill gaps. One participant pointed out

		that the developing countries did not have so many laws as the industrial countries ( <i>probably referring to the policy analysis</i> ). Another participant pointed out that sustainable development, unlike emission reductions, did not lead to direct profit on the market and was therefore difficult to promote. <u>One of the participants who had not answered at least one of the two preceding questions with yes mentioned that the SMA was more advanced than the practice of his/her host country.</u> Another interviewee who had not answered at least one of the two preceding questions with yes did not consider the approach applicable for his/her DNA because the work of the DNA was not as structured as the SMA required.
<b>Post-approval</b>	1	The participant pointed out that a post-approval analysis would be important. So far, no tool has been available for this purpose.
<b>Annex I</b>	4	Again, the participants pointed out that sustainable development was mainly an issue for host countries although the information may be also useful to Annex I countries. <u>Two of the participants had not answered at least one of the two preceding questions with yes.</u>
<b>Social plans</b>	2	One participant considered obligatory social investments as 'blackmailing' project developers. <i>This is kind of a second-best solution. Voluntary action and ideas of the project developers themselves are preferable.</i> The other one considered it entirely acceptable to develop social projects not related to the core project activity. <i>This is a possibility. From the point of view of the project developer, however, it might create more benefits to choose an activity inherently linked to the core business activity as synergies may be discovered.</i>
<b>Guide/structure</b>	5	The SMA was considered useful for guiding and structuring.
<b>Adapt</b>	2	The SMA should be adapted to the country context (e.g. in the former Soviet Union, discursive elements might be difficult to implement). <u>One of the participants had not answered at least one of the two preceding questions with yes.</u>
<b>Link to logframe</b>	1	The participant suggested that the links to the logframe model should be shown to facilitate understanding.
<b>Quantification</b>	4	The participants expressed their interest in quantitative indicators, but also recognized limits to quantification.
<b>Additions</b>	3	Two participants mentioned ideas on how to differentiate the SMA, e.g. along project types. <i>The SMA is just a procedure to clarify concepts and to develop a sustainability strategy. It should be applicable to any CDM project type. This could be further tested in practice.</i> The third interviewee had further ideas to classify the underlying assumptions: First, to use another wording for the rating ('high-potential' and 'low-potential' assumptions) and second, differentiation along economic, social, environmental, cultural impact, local and global impact. <i>These are suggestions which should be tested in practice.</i>
<b>Implementation</b>	1	One interviewee was in favour of the SMA because it does not shape the interpretation of reality to match the process. On the contrary, the process helps to identify what reality actually is.
<b>Handbook</b>	1	The interviewee pointed out that a handbook would be

		helpful and that it should be kept in mind what industry wanted to know about the CDM, i.e. how to complete the PDD and how this related to the EB. <i>First, the sustainability part does not relate to the EB but to the host country. Second, the SMA is not a general guide on how to conduct a CDM project activity. It is a process which demonstrates the contribution to the sustainable development of a CDM project activity.</i>
<b>Content</b>	1	One interviewee pointed out that the SMA should reflect key issues for (L)DCs, i.e. poverty reduction, income, livelihood approach. <i>This is what the SMA can deliver, but the content has to be defined by the DNA and the project developers.</i>
<b>Single elements</b>	11	Some participants raised specific elements they liked very much. One participant said that the involvement of stakeholders was a challenge. According to three participants, the discussion of underlying assumptions was challenging (seemed ambitious/needed further clarification/was quite new for project participants). One interviewee mentioned that the goals and indicators should be defined by the DNA. <i>Goals and indicators formulated by the DNA could provide guidance, but the strength of the SMA is to make project developers elaborate their own sustainability strategy, i.e. project-specific goals and indicators. Among those who had not answered at least one of the two preceding questions with yes said that the discussion of underlying assumptions, the policy analysis and the stakeholder analysis seemed interesting.</i> For further details, see Annexe 8.
<b>Other comments</b>	30	<u>Twelve of the participants had not answered at least one of the two preceding questions with yes.</u> For further details, see Annexe 8.

**Table 50:** Further comments and feedback

#### Raw material: All comments in detail

The comments provided by participants who opted for the options *don't know* and *no* are marked. All other comments were provided by interviewees who opted for a *yes* (i.e. the element was considered useful).

Category	No	Paraphrase (key words highlighted)
Element 1 – policy analysis		
<b>Evaluation</b>	<b>12</b>	<ol style="list-style-type: none"> <li>1. citizens have to be involved for validation.</li> <li>2. first step in evaluation</li> <li>3. certainly very useful for evaluation, to evaluate the planning, impartial methods to assess a project based on SD criteria,</li> <li>4. better evaluation,</li> <li>5. assessment regarding climate change and the environment (including socio-economic and cultural aspects),</li> <li>6. evaluate objectively,</li> <li>7. for the DOE during verification,</li> <li>8. for evaluation,</li> <li>9. to screen the project,</li> <li>10. to be used for evaluation, good to attract investors</li> <li>11. quality involves regulation, environment for the CDM investment to be included</li> <li>12. basis to start to evaluate, first before starting, have in mind, especially at international level: guidelines, national level: laws</li> </ol>
<b>Compliance</b>	<b>20</b>	<ol style="list-style-type: none"> <li>1. Fundamental for compliance with norms and programs of the</li> </ol>

		<p>host country.</p> <ol style="list-style-type: none"> <li>2. project developers for compliance</li> <li>3. know that there won't be problems for approval.</li> <li>4. project developers to be in line</li> <li>5. to qualify as a CDM project activity,</li> <li>6. be secure that norms are completed,</li> <li>7. for the additionality argumentation, for the environmental license (EIA),</li> <li>8. in compliance</li> <li>9. have to adapt to the DNAs requirements,</li> <li>10. to take into account the stringent guidelines on environment,</li> <li>11. likely to be different by project, if there are no consequences of the analysis, no sense, if rules are broken, other agencies (e.g. respective Ministries) will take action</li> <li>12. project developers: for approval, have to comply with policy,</li> <li>13. project developers: interest to comply, risk of rejection,</li> <li>14. agreed with order in region,</li> <li>15. conform with legislation, prevent negative effects,</li> <li>16. consistent with the policy,</li> <li>17. project developers: if do not fulfill, project doesn't advance,</li> <li>18. project developers: work within the laws, protection to their investment,</li> <li>19. project developers: bring forward as in line with policy,</li> <li>20. project developers have to know the sector strategy, be consistent with national development goals, to get support from government, policy analysis very important for investors,</li> </ol>
<p><b>Project management</b></p>	<p><b>24</b></p>	<ol style="list-style-type: none"> <li>1. The policy analysis should be the first step in evaluation to know how to proceed.</li> <li>2. It helps to know that the right project is developed in the right time and right direction</li> <li>3. has to be like that, to know what moving towards,</li> <li>4. required to evaluate the planning: this should be shared with the project developer that he can incorporate and address the respective aspects,</li> <li>5. very important to compare what has been predicted (forecasting) against reality and to provide concrete recommendations,</li> <li>6. The country's resources are very limited and have to be used in an optimal way avoiding duplication and ensuring persistence,</li> <li>7. necessary to guide investor companies working in cooperation with (developing) country partners,</li> <li>8. with how much certainty goals will be matched, bound to goal achievement,</li> <li>9. experience, avoid obstacles and time delay, set a policy and have a baseline, useful to have this cleared before a decision is taken,</li> <li>10. until where you want to go,</li> <li>11. success of the project depends on the implementation without deviation and in balance,</li> <li>12. policies guide decisions, not just momentary gain but long term SD benefits realized,</li> <li>13. anticipate barriers for easy implementation,</li> <li>14. orient at long-term objectives,</li> <li>15. no obstacles to achieve it,</li> <li>16. absolutely important to guide the project activity,</li> <li>17. for planning,</li> <li>18. coordination,</li> <li>19. take into account legislation, local policy, regulation, otherwise could jeopardize the project outcome,</li> <li>20. know the path,</li> <li>21. provide direction (through criteria and priorities), projects more reliable,</li> </ol>

		<p>22. assure success,  23. make it predictable, to be efficient in development process,  24. basis to start to plan</p>
<b>SD goals</b>	<b>33</b>	<ol style="list-style-type: none"> <li>1. project has to fit national goals and objectives,</li> <li>2. take into account sectoral activities, national development plan, and national principles,</li> <li>3. to find out whether the project really contributes to SD,</li> <li>4. national policies are very important for the CDM as the project activities are intended to meet the DC's requirements, i.e. to promote SD; the policies define what SD is,</li> <li>5. has to match priorities, goals</li> <li>6. a set of elements, to link to the country / national policy to integrate the goals,</li> <li>7. to match,</li> <li>8. has to respond to policies, argumentation how it contributes to SD which is derived from policy,</li> <li>9. more integrative approaches needed, application of legislation at the project level, pursue multiple goals (MDGs), not just "empty boxes"</li> <li>10. ensure that CDM is developed within the country and contributes to the governmental policies,</li> <li>11. show that it corresponds to national policy priorities,</li> <li>12. not productive if project activity not consistent with policy,</li> <li>13. joining up objectives and goals,</li> <li>14. SD criteria must reflect the policy (e.g. close illegal landfills, rehabilitate/treat/close area, collect gas),</li> <li>15. have to know the elements within a national policy to capture those programs,</li> <li>16. take into account the objective,</li> <li>17. the policy analysis is useful to integrate climate change into the socio-economic development of the country,</li> <li>18. reflect development priorities,</li> <li>19. be consistent with policy/strategy of the country and national development plan (e.g. poverty reductions, quality of life, etc.),</li> <li>20. CDM to support projects contributing to SD at the national level which cannot be put into practice due to lack of financing (e.g. poverty alleviation, reduction of contamination/pollution),</li> <li>21. SD not possible without taking into account policy (regional and national),</li> <li>22. fundamental to be in synergy with the national policy,</li> <li>23. project in line with governmental objectives,</li> <li>24. at the local level, environment important, three pillars of SD,</li> <li>25. point out the national priorities,</li> <li>26. integrate CDM into sector planning (economic development planning),</li> <li>27. take into consideration priorities of the country, conventions, MDGs: the environmental agency has defined priority areas for work, could be used, ecological issues and some cross-cutting issues,</li> <li>28. DNA criteria correspond to policy, comprehensive,</li> <li>29. bring in new ideas and interact with policies,</li> <li>30. SD without policy very difficult to define, to be guided by national and international priorities, guide the people in carrying out,</li> <li>31. understand how the activity affects the fulfillment of the policies</li> <li>32. understand the project activity, in line with political framework,</li> <li>33. can be difficult to find a project that fits</li> </ol>
<b>Involvement /stakeholder</b>	<b>8</b>	<ol style="list-style-type: none"> <li>1. citizens have to be involved for validation.</li> <li>2. consideration of multi-stakeholders,</li> </ol>

interests		<ol style="list-style-type: none"> <li>3. not to allow benefiting on the expense of the stakeholders and national partners,</li> <li>4. 90% of the natural resources of the country are community owned (they have a strong stake in the process)</li> <li>5. main concern: awareness and participation</li> <li>6. consider stakeholder interests,</li> <li>7. general public and decision makers to be involved</li> <li>8. to educate, for awareness raising</li> </ol>
Scope	6	<ol style="list-style-type: none"> <li>1. It was raised that the policy analysis should not be limited to the CDM context but include sustainable development aspects in general. A policy analysis should show whether the conditions are good and if not, the policies would have to be reviewed. In countries where no sustainable development policies have been specified, this element might be challenging for project developers. In that case, project developers would need funding if they had to carry out an entire policy analysis themselves.</li> <li>2. even more global than the CDM.</li> <li>3. the main question is how far does this policy analysis go (as done in the SMA, it is relevant for all actors)</li> <li>4. generic, quite broad, what are specific elements?</li> <li>5. SMA very general (and has to be general, just a framework, to adapt it to concrete situation)</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>6. too big for projects, criteria are sufficient</li> </ol>
Politicized	2	<ol style="list-style-type: none"> <li>1. CDM no more only a very technical issue, today very politicized, this shifted,</li> <li>2. CDM takes place within the policy area, what is done with the CDM is political or politicized</li> </ol>
Transparency	1	<ol style="list-style-type: none"> <li>1. different requirements of countries, not always transparent on requirements, criticized by NGOs, without policy analysis what security has the host country that CDM contributes to SD?, it's the host country prerogative, but most DNAs of host countries do not prescribe SD criteria, for investors: premium projects</li> </ol>
Uniform code	1	<ol style="list-style-type: none"> <li>1. international treaties, international obligations, uniform code of procedures, policies for all countries, but very difficult regarding SD, I mean not "identical", but "uniform"</li> </ol>
DNAs	17	<ol style="list-style-type: none"> <li>1. For evaluation (i.e. the DNA) very useful,</li> <li>2. have to issue the letter of approval,</li> <li>3. relevant to sign off the project,</li> <li>4. assess,</li> <li>5. SMA is a more analytic tool, the real process at the DNA is less structured,</li> <li>6. the DNA is the starting point, they have to set up the national plan and break it down to each sector, into SD criteria,</li> <li>7. DNAs to represent the country,</li> <li>8. hierarchy of criteria varies considerably according to the country, host DNAs to judge whether contribution has been shown clearly,</li> <li>9. for efficiency,</li> <li>10. push policy,</li> <li>11. has to assure that all assessments in place, that CDM is beneficial to the country,</li> <li>12. SD is host country decision,</li> <li>13. could have problems in implementation due to restricted resources (if the DNA conducts it),</li> <li>14. to promote policies,</li> <li>15. normally don't have all aspects: all stakeholders</li> <li>16. mainly for host country,</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>17. Not the role of the (Annex I-)DNAs to judge, therefore one has to rely on the host countries, but the SMA is a realistic</li> </ol>

		approach, and I imagine that it might be useful
Project developers	21	<ol style="list-style-type: none"> <li>1. Project developers try to cheat to get additional financial resources as simply as possible.</li> <li>2. project developers should know the different policies for compliance,</li> <li>3. ensure that the project does not die off; ask for external assistance if needed,</li> <li>4. not sure if they use this but if project not in line with policy, they'll get a problem, therefore they should follow the country discussion,</li> <li>5. have to adapt to the DNAs requirements,</li> <li>6. indispensable for them regarding additionality,</li> <li>7. have a stake in the ongoing process with the WB,</li> <li>8. not for them, have business interest, no importance for them,</li> <li>9. maybe an independent consultant could do this, only if it is a condition of the EB, will not be done voluntarily,</li> <li>10. good reason for support by stakeholders, demonstrate social conscience, could get further political and economic support,</li> <li>11. for approval</li> <li>12. interest to comply, risk of rejection,</li> <li>13. should know, be aware,</li> <li>14. if do not fulfill, project doesn't advance,</li> <li>15. specify, policy analysis,</li> <li>16. should orient themselves at policies / criteria,</li> <li>17. work within the laws, protection to their investment,</li> <li>18. maybe not so much involved in policy analysis,</li> <li>19. project developers have to know the sector strategy, be consistent with national development goals, to get support from government, policy analysis very important for investors,</li> <li>20. to develop and write the PDD,</li> <li>21. succeed in country, support from policy makers,</li> </ol>
Others	9	<ol style="list-style-type: none"> <li>1. each stakeholder has specific criteria and needs, which do not necessarily match with the policies.</li> <li>2. The policy analysis provides relevant information to others.</li> <li>3. population wants to know what is really implemented,</li> <li>4. beneficiaries,</li> <li>5. stakeholders have different points of view and come to different conclusions,</li> <li>6. not in the 1<sup>st</sup> case, after validation, DOE check to evaluate takes long time,</li> <li>7. to protect their interests,</li> <li>8. maybe rural people don't understand,</li> <li>9. especially higher level of government concerned</li> </ol>
Other comments	9	<ol style="list-style-type: none"> <li>1. important that it is concrete, concrete examples</li> <li>2. to encourage</li> <li>3. always good to have some sort of overview of political aspects</li> <li>4. clear analysis important for the host country</li> <li>5. SD has three dimensions (soc, ec, env'r) plus the political one, thus has to be taken into account</li> <li>6. environmental (including ecological and social) assessment, political aspects to take into account,</li> <li>7. depends on the project and is not necessary/ not analyzed for all projects</li> <li>8. all frameworks have their pro's and con's, this country has its own style to do policy planning since the 70es, different stage of development to other developing countries</li> <li>9. laid down in the Government Act of the agency (DNA)</li> </ol>
<b>Element 2 – stakeholder analysis</b>		
Compliance	10	<ol style="list-style-type: none"> <li>1. required for proposal</li> <li>2. part of the PDD</li> <li>3. comply with rules</li> <li>4. all actors involved, otherwise not approvable</li> </ol>

		<ol style="list-style-type: none"> <li>5. negotiate for approval letter; take into account international market, too (?)</li> <li>6. part of EIA (social impact analysis)</li> <li>7. to prevent rejection by the EB</li> <li>8. for approving the project</li> <li>9. approve if consensus</li> <li>10. this is an official procedure, for documentation, already in PIN</li> </ol>
Contribution to SD	10	<ol style="list-style-type: none"> <li>1. more clarity, more certainty that the project contributes to SD</li> <li>2. what is the contribution</li> <li>3. for development and fulfillment of policies</li> <li>4. indispensable to reach the CDM goals</li> <li>5. local prioritized areas</li> <li>6. develops only in sustainable way if people affected involved</li> <li>7. social aspects most critical because had been neglected in the past, projects (not CDM) had to be stopped due to lack in social aspects</li> <li>8. incorporate comments and recommendations of the stakeholders for SD of the nation</li> <li>9. without stakeholders, no SD</li> <li>10. good governance</li> </ol>
Represent	22	<ol style="list-style-type: none"> <li>1. represent all stakeholders when dealing with SD</li> <li>2. cover all, the basis</li> <li>3. extent depends on how many people, what weight, status,</li> <li>4. bring on board major stakeholders</li> <li>5. public input from major stakeholders</li> <li>6. could vary per project, complexity</li> <li>7. consider people who could be affected, whom to consult</li> <li>8. the affected zone, represent the country, population which is near by,</li> <li>9. sometimes definition of stakeholders difficult</li> <li>10. community interests</li> <li>11. look at global and regional features</li> <li>12. for instance sustainable development of the community</li> <li>13. "green" party has other interests than industry</li> <li>14. affected people to be included</li> <li>15. national stake in the activity</li> <li>16. NGOs always involved</li> <li>17. board of directors consisting of private sector, public sector, social sector</li> <li>18. identify the stakeholders</li> <li>19. who to target</li> <li>20. each group to be involved</li> <li>21. relevant if stakeholders have a different opinion (reputable, how come, why)</li> <li>22. those who are affected</li> </ol>
Beneficiaries	7	<ol style="list-style-type: none"> <li>1. who gets the benefits</li> <li>2. the affected will be the beneficiaries</li> <li>3. all stakeholders should benefit</li> <li>4. stakeholders</li> <li>5. ensure that it corresponds to stakeholders' needs, that it has a good impact</li> <li>6. show how to make people in project area benefit</li> <li>7. be in line with everybody, nobody to be put at a disadvantage</li> </ol>
Management	19	<ol style="list-style-type: none"> <li>1. risk minimization, analyze what can become critical, consider consequences</li> <li>2. detect gaps, not run into problems</li> <li>3. mainly important for planning</li> <li>4. before planning, consult, integrate activities into a plan, process of the project, planning</li> <li>5. get clear, snap-shot, which project focus area, critical area, makes it very easy to plan</li> <li>6. not to have negative impacts in future, guarantee continuation, permanence</li> </ol>

		<ol style="list-style-type: none"> <li>7. improve the project, new variables, points of view of others are heard</li> <li>8. better to know from the beginning whether a project has negative impacts on other activities, take all measures to avoid these problems</li> <li>9. see at level to intervene</li> <li>10. not for planning</li> <li>11. discover gaps</li> <li>12. to develop the project</li> <li>13. refine the project, to analyze well</li> <li>14. helps to find barriers on CDM</li> <li>15. for planning</li> <li>16. not so much needed for planning, because this is an issue for the project developers and not the stakeholders, the country; although good to develop project which are more in line with stakeholders needs, but not such a big issue</li> <li>17. important for implementation</li> <li>18. that the project developers take the correct measures and produce the benefits</li> <li>19. helps implementing</li> </ol>
Acceptance and support	27	<ol style="list-style-type: none"> <li>1. acceptance</li> <li>2. to get help from stakeholders</li> <li>3. that approval goes smoothly</li> <li>4. required for proposal</li> <li>5. social organizations quite a lot of power in fundamental topics</li> <li>6. if they don't agree, stop the project</li> <li>7. guarantee, legitimization for project developers, support, no conflicts, prevent complaints</li> <li>8. to determine the level of responsibility</li> <li>9. confidence building, encourage, support</li> <li>10. there is a number of possible criteria, acceptability and ownership needed, thereby reduce transaction costs</li> <li>11. important to respect the rights of the population</li> <li>12. indispensable for approval</li> <li>13. acceptance</li> <li>14. meet common ground</li> <li>15. for investments, cooperation</li> <li>16. find compromise of all aspects of the project</li> <li>17. ownership</li> <li>18. cooperate</li> <li>19. could help in achieving validity for approval</li> <li>20. collaboration</li> <li>21. support for the project</li> <li>22. if everybody against the project, better leave it</li> <li>23. if people in the project area don't understand and don't have an interest, they might block the project: show how to make them benefit</li> <li>24. common understanding</li> <li>25. reach a compromise, an agreement</li> <li>26. build consensus, take into account needs and interests</li> <li>27. move together</li> </ol>
Involvement	8	<ol style="list-style-type: none"> <li>1. creates ownership, get involved</li> <li>2. monitor involvement of stakeholders</li> <li>3. integrate stakeholders' views</li> <li>4. feedback</li> <li>5. In practice problematic, stakeholder involvement often not satisfactory</li> <li>6. ensure bottom-up approach</li> <li>7. importance maybe not seen immediately; mix: top-down approach before bottom-up approach, not only top-down</li> <li>8. involve all stakeholders to define the modalities</li> </ol>
Responsibility	2	<ol style="list-style-type: none"> <li>1. responsibility of the project developer</li> <li>2. to determine the level of responsibility</li> </ol>

Quality and success	6	<ol style="list-style-type: none"> <li>1. increases quality of the design and performance</li> <li>2. discuss deliberately to identify measures to succeed</li> <li>3. success of a project depends on the people in the project area, if they don't understand and don't have an interest, they might block the project</li> <li>4. if not consulted, views not considered, no success (multiple)</li> <li>5. make project successful,</li> <li>6. for successful projects, no negative impacts</li> </ol>
Evaluation	16	<ol style="list-style-type: none"> <li>1. to review the work</li> <li>2. good for evaluation (DNA)</li> <li>3. basis for the SD criteria</li> <li>4. on this the SD matrix is based</li> <li>5. to facilitate the monitoring</li> <li>6. infos used for verification and validation by DOEs</li> <li>7. for evaluation important for the market of CERs, qualitative component, sufficient quantity of stakeholders, show the virtue of the project to the client</li> <li>8. if recognize that something is not OK, send it back</li> <li>9. evaluate impacts</li> <li>10. to set up criteria</li> <li>11. for the development of criteria</li> <li>12. to evaluate</li> <li>13. depends on the methodology, aspects of priority (DOE), monitoring methodology is host country issue</li> <li>14. important for validation that it is conform with guidelines and takes into account all stakeholders</li> <li>15. for evaluation very useful</li> <li>16. to be verified by the stakeholders</li> </ol>
Insights, transparency	14	<ol style="list-style-type: none"> <li>1. closer to meet clients' and customers' needs</li> <li>2. further insight into the CDM</li> <li>3. understand much better, why + or – and how to deal with it</li> <li>4. for clarity</li> <li>5. analyze, know who does what, who are the stakeholders</li> <li>6. first-hand experience, to know how the things are going, helps to develop possible future plans for projects etc. not only CDM, but also for politics of the government</li> <li>7. consider interesting points of view</li> <li>8. to get to know the project</li> <li>9. help in future strategy, wiser, better decision</li> <li>10. better understanding</li> <li>11. provides clarity</li> <li>12. understand benefits</li> <li>13. gives you ideas, inputs from + or – affected people</li> <li>14. know those affected and know the impacts on them</li> </ol>
DNAs	9	<ol style="list-style-type: none"> <li>1. In one country, the DNA had generally decided who were the 5 main stakeholders to involve</li> <li>2. coordinate</li> <li>3. maybe difficult due to different technologies and boundaries, assisting helps to better understand</li> <li>4. Annex I do generally not deal with all stakeholders</li> <li>5. visit the communities, reflect the needs, involve others, built up a more intimate relationship with the project developers</li> <li>6. host DNA to assess, Annex I DNA to believe</li> <li>7. make sure that it is taken into account, approve, not only rely on the PDD</li> <li>8. also to choose the best foreign partners (other kind of stakeholder), identify main risks concerning stakeholders, sustainability and financial availability may become barrier to implementation</li> <li>9. analysis of outputs, discuss with them</li> </ol>
Project developers	16	<ol style="list-style-type: none"> <li>1. project developers: have their own needs, money, CERs</li> <li>2. the way of involvement not described, maybe useful to better structure</li> </ol>

		<ol style="list-style-type: none"> <li>3. to be in compliance</li> <li>4. guarantee, legitimization</li> <li>5. from experience, don't consider this much</li> <li>6. owner/investor sell/buy the CERs, but have to explain more issues for long term</li> <li>7. has to know those with whom he has to work for the success of the project</li> <li>8. first-hand experience, to know how the things are going, helps to develop possible future plans for projects, avoid faults with future projects</li> <li>9. will benefit</li> <li>10. responsibility of him</li> <li>11. could help in achieving validity for approval</li> <li>12. facilitators</li> <li>13. should demonstrate in PDD that they are conform with guidelines and take into account all stakeholders</li> <li>14. know place and people</li> <li>15. have to consider stakeholders' needs</li> <li>16. no time for it, but should</li> </ol>
Others	11	<ol style="list-style-type: none"> <li>1. others: find out about the project</li> <li>2. stakeholders: influence the project development, self-confidence, more responsible, institutional stakeholders: evaluate and influence project</li> <li>3. stakeholders use this element, but in the case of NGOs, it's not always used to the benefit of the project, projects have always some environmental harm and NGOs sometimes block and thereby prevent the project from qualifying as a CDM project activity</li> <li>4. population which is near by: income</li> <li>5. feedback for others</li> <li>6. value added for others</li> <li>7. understand better, structure on the ground</li> <li>8. put it into practice</li> <li>9. learn more</li> <li>10. very important for the CDM, e.g. ministries</li> <li>11. put on boards</li> </ol>
Other comments	14	<ol style="list-style-type: none"> <li>1. but depends on sectors, public consultation, Aarhus Convention</li> <li>2. recollect comments on the methodology, all sectors, implications</li> <li>3. for DCs CO<sub>2</sub> reduction not important but SD</li> <li>4. to concentrate, gives you what you want exactly</li> <li>5. relevant for the entire cycle</li> <li>6. respect</li> <li>7. the owner: life quality; CDM market: purchase/sell,</li> <li>8. unwise to act without consulting them</li> <li>9. fundamental, more than anything else</li> <li>10. wide participation is a policy in general</li> <li>11. all kinds of elements to be discussed, consider inputs and outputs</li> <li>12. not only for CDM, all projects impact on peoples live</li> <li>13. EIA experience says it's helpful</li> <li>14. Guide, clear principles, guidelines for each stakeholder, worldwide</li> </ol>
<b>Element 3 – resources and inputs</b>		
Financial aspects	10	<ol style="list-style-type: none"> <li>1. check if economically viable before investing</li> <li>2. to be counted/listed, clean technology</li> <li>3. budget</li> <li>4. funding sources, first to know, who? Government or collaboration with funding agencies?</li> <li>5. financial status,</li> <li>6. check profitability (in the larger sense)</li> <li>7. fundamental for solid financing approach</li> </ol>

		<ol style="list-style-type: none"> <li>8. in any project has to be specified the source of financing, has to be viable</li> <li>9. financing for CDM key, but don't know more about this</li> <li>10. financial status, all resources</li> </ol>
SD	10	<ol style="list-style-type: none"> <li>1. very much related to SD (financial and national resources)</li> <li>2. for the fulfillment of SD criteria</li> <li>3. generate elements which contribute to SD, labor policy, infrastructure, basic needs</li> <li>4. the country is a small island, resources are vulnerable to global impacts of climate change etc, make sure carried out in most sustainable manner, resources to be available today and in future</li> <li>5. sustainability, changing climate, be aware, what happens, scientific analysis</li> <li>6. sustainability has to be economical, use as efficient as possible, environmental, too, no SD project without that</li> <li>7. to be sure that it corresponds to stakeholders' needs, that it has a good impact</li> <li>8. For SD, the host country and the project developer have to agree, benefits have to be shown</li> <li>9. helpful to determine at least from natural resources perspective the essence of SD</li> <li>10. when you look at SD, you have to go a step further down and identify the inputs to make benefits possible for the project, the communities and environment</li> </ol>
Consensus	2	<ol style="list-style-type: none"> <li>1. consensus</li> <li>2. For SD, the host country and the project developer have to agree</li> </ol>
Compliance	5	<ol style="list-style-type: none"> <li>1. for approving</li> <li>2. for the qualification as a project activity it helps</li> <li>3. major elements to approve, counts on major information when getting to know a project, what is needed</li> <li>4. 3 important points: environmental impact, authorizations, opinion of the company; no project can be implemented without consulting strong NGOs, use of resources depends on the scale, some projects need more authorizations than others</li> <li>5. very important, to have a refined project, increase the chance of getting approved</li> </ol>
In general	2	<ol style="list-style-type: none"> <li>1. in general important, also for specific projects</li> <li>2. not CDM specific, any project</li> </ol>
Evaluation	18	<ol style="list-style-type: none"> <li>1. significant impact to validation verification, registration process</li> <li>2. for evaluation</li> <li>3. not really</li> <li>4. until where to extent evaluation, try to follow, evaluation for each outcome</li> <li>5. for statistics, to measure employees, economic part, quantify</li> <li>6. for evaluation: DNAs and others (any investor)</li> <li>7. mainly for evaluation</li> <li>8. for validation resources and inputs should to be analyzed,</li> <li>9. for SD evaluation</li> <li>10. assess liability, additionality, SD</li> <li>11. to set up criteria</li> <li>12. monitoring is the basis</li> <li>13. for evaluation: what type of project, what potential</li> <li>14. improve evaluation, control</li> <li>15. less important</li> <li>16. evaluation, don't know, depends on owner</li> <li>17. to evaluate the cause of an impact</li> <li>18. for evaluation</li> </ol>
Predict outputs	5	<ol style="list-style-type: none"> <li>1. what put into the project and what comes off</li> <li>2. input determines output, what expected, need input to</li> </ol>

		<p>estimate output / outcome</p> <ol style="list-style-type: none"> <li>3. has to be known for expected results and needs to be addressed</li> <li>4. To define the outcome of the project</li> <li>5. to know what you can expect</li> </ol>
Management	24	<ol style="list-style-type: none"> <li>1. plan better</li> <li>2. perhaps also, but the CDM part in parallel to the 'real' project, just part referring to the CERs (this is described in the PDD)</li> <li>3. to know what you are going to get, in general you know your goal and you know what is coming, you need for CDM a projection what you'll get, it's an element, a success factor</li> <li>4. would be interesting, to identify barriers, e.g. technological, lack of knowledge,</li> <li>5. probably</li> <li>6. part of the management cycle,</li> <li>7. needs work to be done</li> <li>8. avoid unforeseen problems</li> <li>9. but also for better quality of planning,</li> <li>10. for project planning resources and inputs should to be analyzed,</li> <li>11. it helps project developers to plan their project activity</li> <li>12. without this no good planning / implementation, allocation to activities, sustainable projects (persistence)</li> <li>13. identify what essential, major tools, for execution, HR, successful resources, logistical resources, each stage of project</li> <li>14. central part of any project development process, identify risks</li> <li>15. to develop the project</li> <li>16. very important, to have a refined project,</li> <li>17. must know this to plan</li> <li>18. for planning and at all project stages</li> <li>19. improve planning</li> <li>20. what improvement / capacity</li> <li>21. very important</li> <li>22. for planning, especially important for the project owner</li> <li>23. from beginning, plan what required, how much it will cost for instance, persons needed, experts needed</li> <li>24. for planning</li> </ol>
Transparency	11	<ol style="list-style-type: none"> <li>1. sufficient information, reduces level of ambiguity</li> <li>2. make transparent, level of technology, whether suitable for the country</li> <li>3. transparent</li> <li>4. clearly define</li> <li>5. information at the detail</li> <li>6. for clarity</li> <li>7. formal and clear understanding</li> <li>8. comprehensive understanding, otherwise would miss a lot of things, usually you don't pay attention</li> <li>9. this view about what is necessary for implementation</li> <li>10. know much more about project, helps in future</li> <li>11. better understanding,</li> </ol>
Success	5	<ol style="list-style-type: none"> <li>1. profitable</li> <li>2. opportunities for success</li> <li>3. success of the project activity, technology available and probed</li> <li>4. define baseline and what is needed / available to achieve the impacts</li> <li>5. sustainable technology or only during crediting period?</li> </ol>
Difficulties/restrictions	8	<ol style="list-style-type: none"> <li>1. sometimes useful, not very clear, real benefit must be known</li> <li>2. the project activity is at the risk of the project developer; some difficulties in understanding the sense of the analysis of resources and inputs from the point of view of the DNA</li> <li>3. think the other way around (view of project developers)</li> </ol>

		<ol style="list-style-type: none"> <li>4. Internal and external activities (project itself or social plan), this aspect is not clear</li> <li>5. but only a few persons up to date, there is not sufficient capacity, HR for the DNA,</li> <li>6. but be careful, project cycle, take into consideration the time, not brake down, not make it slower</li> <li>7. how to promote, costs money to develop PIN</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>8. little experience, still having problem with PINs and PDDs, expertise needed, don't know how to develop project activities, time very limited, need people to work on this</li> </ol>
DNAs	14	<ol style="list-style-type: none"> <li>1. quite useful (input for draft procedures), DNA provides training,</li> <li>2. financing</li> <li>3. some difficulties in understanding the sense of the analysis of resources and inputs from the point of view of the DNA</li> <li>4. for evaluation</li> <li>5. not by the DNA</li> <li>6. clear understanding, assess liability, additionality, SD</li> <li>7. has to be informed about it be the PDs</li> <li>8. DNAs would have to support developers in doing it</li> <li>9. DNAs check whether project implementable</li> <li>10. because it is the vis-a-vis at the political level, check profitability (in the larger sense)</li> <li>11. not sure, consultation, Committee</li> <li>12. assure development</li> <li>13. for evaluation, to check whether requirements are met and the resources are used in a fair way</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>14. This is not the role of the DNAs (meaning Annex I) to judge, therefore one has to rely on the host countries. But the SMA is a realistic approach, imagine that it might be useful</li> </ol>
Project developers	21	<ol style="list-style-type: none"> <li>1. project developers: it's their liability, unfortunately not so relevant for planning, if I was developer maybe I would say yes, but don't think that developers consider so many issues for SD</li> <li>2. how to manage</li> <li>3. the project activity is at the risk of the project developer</li> <li>4. project developers: e.g. pollution, life conditions</li> <li>5. This is de facto done by the project developers (want to meet their break-even)</li> <li>6. proposal covers rather the technical part, often easiest to define, hopefully they do define resources and inputs</li> <li>7. project developers risk to be driven by their enthusiasm</li> <li>8. to know what the project is</li> <li>9. Project developer is responsible, thus, very important for him (e.g. generation of employment)</li> <li>10. key for them (detailed info)</li> <li>11. mostly come from project developers or indicated where they come from, state up-front to DNA</li> <li>12. to ensure the project developer that the project has the chances required for its implementation</li> <li>13. DNAs would have to support developers in doing it</li> <li>14. for developers not good for approval and for selling CERs if this info is incomplete</li> <li>15. first element, has to take it into account to have sufficiently high benefits</li> <li>16. only business</li> <li>17. the promoters must be experienced and guarantee success of the project activity</li> <li>18. want output, but sustainable technology or only during crediting period?</li> <li>19. important for the owner</li> </ol>

		20. assure development 21. for planning
Others	9	<ol style="list-style-type: none"> <li>1. not yet relevant for others, stakeholder consultation just being developed, should be guided, in future perhaps yes</li> <li>2. all relevant info would affect 'others'</li> <li>3. benefit, transparent</li> <li>4. stakeholders (maybe implicitly): beneficiaries outside the project, e.g. community process, depends on the project</li> <li>5. foreign and national partners, premium index, % of CERs, compensate deficiencies in SD criteria,</li> <li>6. for others to estimate their benefits</li> <li>7. key for DOEs (detailed info)</li> <li>8. social component to be implemented</li> <li>9. not so sure how relevant for "others", they are not directly involved</li> </ol>
Other comments	8	<ol style="list-style-type: none"> <li>1. additionality requirement (with regard to ODA)</li> <li>2. the buyers have a contract until the end of the crediting period, want to see results</li> <li>3. the country has already its own procedures, good practices, carbon market is a new market, created on paper, this element could be used</li> <li>4. I think so, afraid, in my area, other processes, for the concrete project, but no clear guidance available</li> <li>5. You can't have a project without that</li> <li>6. cannot comment, not enough experience</li> <li>7. before PDD</li> <li><b>Don't know:</b></li> <li>8. never been applied</li> </ol>
<b>Element 4 – goal hierarchy</b>		
Compliance	5	<ol style="list-style-type: none"> <li>1. positive for approval</li> <li>2. theoretically obligatory for each project</li> <li>3. for developers important because they have to comply</li> <li>4. approval</li> <li>5. include the elements required, speed up approval procedure</li> </ol>
Difficulties	5	<ol style="list-style-type: none"> <li>1. Try the best in practice: setting goals, sub-goals might be difficult to develop, sometimes you might not follow exactly this scheme, reachable, practicable goals needed</li> <li>2. resources, skills, expertise, very professional staff needed</li> <li>3. CDM does not allow for ex-post evaluation, if letter of approval has already been issued</li> <li>4. maybe not with all projects, has to be adapted to the type of projects, weighting can vary</li> <li><b>Don't know:</b></li> <li>5. first step: host country requirements, then: buyers involved, impose minimal criteria, approval criteria of donors, no internationally agreed definition, usually try to anticipate, but different structure, develop own goal hierarchy? They could miss abstraction level, the "jargon" (social, environmental, economic)</li> </ol>
Systematic	7	<ol style="list-style-type: none"> <li>1. quite systematic, indicates sequence for activities</li> <li>2. systematic approach would be good, any areas to be developed, nothing overlooked, HR, social sciences come in</li> <li>3. more systematic, standardized approach for the future</li> <li>4. helps to structure ideas</li> <li>5. to mark elements, to structure information</li> <li>6. provide a better overview, better orientation</li> <li>7. make it logic</li> </ol>
Link to other elements	4	<ol style="list-style-type: none"> <li>1. link indicators with the policy goals, changing indicators can also change the goals</li> <li>2. qualitative and quantitative indicators</li> <li>3. come up with activities to achieve goals, to guide</li> <li>4. relation to DNA criteria &amp; indicators</li> </ol>

SD	9	<ol style="list-style-type: none"> <li>1. contribution to SD criteria</li> <li>2. meet needs, adhere to government policy, overall goals e.g. health, poverty reduction</li> <li>3. for SD criteria, 4 categories,</li> <li>4. ensure CDM project activities contributing to development</li> <li>5. for sustainable development to reflect collective preferences, political expression</li> <li>6. the main goal is reduction of GHG (reduce climate change), no standard, no goals have been defined, the goals emerge from the project activities (bottom-up)</li> <li>7. Important to know at which level the project is taking place (global, national, regional), to see if it contributes to the national goal (e.g. fixation of dunes, infiltration of water contributing to the protection of environment)</li> <li>8. what important for SD</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>9. for the social and ecological aspects</li> </ol>
Evaluation	28	<ol style="list-style-type: none"> <li>1. ex-post evaluation, ambiguity reduced</li> <li>2. especially for evaluation</li> <li>3. measure performance, assess better, objective evaluation</li> <li>4. For evaluation depending on the approach of the DNAs, not in this country</li> <li>5. it helps to evaluate</li> <li>6. for evaluation</li> <li>7. evaluation</li> <li>8. basis for evaluation</li> <li>9. different levels, each time there is something to qualify, follow up activities, during a specific period, see the set of special activities, net effects</li> <li>10. evaluation</li> <li>11. evaluation</li> <li>12. monitoring needed</li> <li>13. for evaluation</li> <li>14. logframe (logical framework), to show whether performing, validation of contribution to national SD, CERs</li> <li>15. For comparison (e.g. 5 different CDM projects)</li> <li>16. can't define results without goals, assessment of the achievement / targets / goals, EB: how targets to be measured</li> <li>17. evaluation (internal and external by others, e.g. DOE)</li> <li>18. especially for evaluation, check if it reduces GHG, negative environmental impacts, negative social impacts, consider</li> <li>19. also for evaluation of results (my opinion)</li> <li>20. evaluation</li> <li>21. evaluation</li> <li>22. choose the projects</li> <li>23. allows to follow</li> <li>24. not so much, but maybe</li> <li>25. how evaluate performance, what achieved</li> <li>26. evaluation</li> <li>27. evaluation based on criteria and commitments</li> <li>28. set preconditions; check whether the goals of the project developers satisfy the SD criteria</li> </ol>
Management	31	<ol style="list-style-type: none"> <li>1. We know the goal, we should know what kind of resources this will require</li> <li>2. if fully defined provides means for implementing team, reflect back, what to do</li> <li>3. constraints, chances, partners</li> <li>4. support for the planning itself</li> <li>5. yes: definition of projects</li> <li>6. clear path what to achieve, at short, medium long term level, time frame, good management</li> <li>7. for planning, what we want to do</li> </ol>

		<ol style="list-style-type: none"> <li>8. not for planning (because project developers have their own goals) but for development</li> <li>9. basis for project planning</li> <li>10. look where to go</li> <li>11. planning</li> <li>12. anticipate problems; propose goals to be achieved with the activities</li> <li>13. planning</li> <li>14. operation requires standards and guidelines, direction, what will be the output</li> <li>15. planning</li> <li>16. target of the project</li> <li>17. can't get results without goals,</li> <li>18. every environmental problem, new one if first solved, clear air, use of land, trade offs</li> <li>19. shaping activities</li> <li>20. of course, planning, implementation, directed to attain goal</li> <li>21. helps in doing the project, implementation</li> <li>22. how to implement, helps to modify and to vary the type of the project</li> <li>23. focus on what and on how to achieve, pitfalls</li> <li>24. allows to follow, to know where to start, major objectives</li> <li>25. helps to know where you are going, track if not achieved, where went something wrong, gaps, to be reflected in SD criteria</li> <li>26. if you don't have a roadmap, how would you know to reach the target, whether achieved 1st objective (ER) which is new, continuous process: SD, check with current environment, still adequate?</li> <li>27. planning</li> <li>28. planning, what to apply</li> <li>29. planning</li> <li>30. able to exactly know resources, activities, time frame...</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>31. a bit too ambitious, this should not be part of project planning, but should be specified top-down by the DNA, project has to fit in this goal hierarchy</li> </ol>
Prioritization	15	<ol style="list-style-type: none"> <li>1. not everything to take into account, not important things to be discarded</li> <li>2. hierarchical order</li> <li>3. priorities</li> <li>4. if very ambitious goal, focus on key issues, nothing left out, prioritize</li> <li>5. identify main objective, other benefits highlighted, total picture</li> <li>6. prioritize, organize in a hierarchy, and highlight constraints!</li> <li>7. prioritize between options, which trade-offs, pathways, emphasis, conflicts between different components, intention of the project</li> <li>8. to define and respond to the priorities</li> <li>9. prioritization</li> <li>10. give an idea to everyone, what is important, conflicts to be detected, define preferences</li> <li>11. main goal: GHG reduction</li> <li>12. goal for participation in the CDM is SD, prioritize sub-goals</li> <li>13. priorities</li> <li>14. identify a goal, definitely main goal and sub-goals</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>15. if there is a capacity restriction/ not enough resources and priorities have to be set, but in this country don't need this, project activities in all areas needed, not needed to focus</li> </ol>
Success/ quality	4	<ol style="list-style-type: none"> <li>1. success or failure</li> <li>2. No detail, no good project</li> </ol>

		<ol style="list-style-type: none"> <li>3. if you don't have a roadmap, how would you know to reach the target, whether achieved 1st objective (ER) which is new, continuous process: SD, check with current environment, still adequate?</li> <li>4. achieve goals</li> </ol>
Transparency	16	<ol style="list-style-type: none"> <li>1. tree more transparent, positive for approval, digestible</li> <li>2. illustrates, provides overview</li> <li>3. ambiguity reduced</li> <li>4. motive, why this project is wanted, provide information on how to achieve, able to get a feeling, whether achievable, successful, contribute what was meant to</li> <li>5. obtain information, suggestions of people involved, in workshops</li> <li>6. clarity</li> <li>7. if it helps to understand the project, how it contributes to SD and economic growth</li> <li>8. transparency</li> <li>9. identify main objective, other benefits highlighted, total picture</li> <li>10. clear knowledge, basic understanding</li> <li>11. make things clear, explain/document decisions</li> <li>12. major clarity, when I present the project to the others, helps to condensate it to the important issues, not tiring for the audience, visual: helps to communicate</li> <li>13. Clarifies the mind</li> <li>14. provide a better overview, better orientation</li> <li>15. helps to understand</li> <li>16. get sense out of the project</li> </ol>
Consensus	2	<ol style="list-style-type: none"> <li>1. to achieve a common understanding</li> <li>2. Both DNAs and PDs have to come together, come to a common understanding, to a common goal hierarchy</li> </ol>
General	2	<ol style="list-style-type: none"> <li>1. not CDM specific</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>2. in general yes, but don't know for the CDM, not yet thinking about it</li> </ol>
DNAs	13	<ol style="list-style-type: none"> <li>1. interested in the ERs and that this is well planned for the e.g. 10yrs period</li> <li>2. evaluation</li> <li>3. set up the goal hierarchy, an accredited checklist, dialogue with the investor should be established, because he might not know about the goals; link indicators with the policy goals, changing indicators can also change the goals</li> <li>4. host DNA for planning</li> <li>5. evaluation (internal and external by others, e.g. DOE)</li> <li>6. where is the impact</li> <li>7. DNA just see criteria and give approval</li> <li>8. DNA top-down</li> <li>9. check whether stakeholder represented</li> <li>10. if there is no law violated, no veto</li> <li>11. goal, priorities</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>12. This is not the role of the DNAs (meaning Annex I) to judge, therefore one has to rely on the host countries, but the SMA is a realistic approach, imagine that it might be useful</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>13. should be specified top-down by the DNA, project has to fit in this goal hierarchy</li> </ol>
Project developers	19	<ol style="list-style-type: none"> <li>1. project developers assure that project is sustainable</li> <li>2. maybe for project developers, don't know, don't know their goals</li> <li>3. for developers important because they have to comply</li> <li>4. clear path what to achieve, at short, medium long term level, time frame, good management</li> </ol>

		<ol style="list-style-type: none"> <li>5. useful for them</li> <li>6. planning</li> <li>7. important as they will be challenged by stakeholders</li> <li>8. take into account, not necessarily conform, their goal hierarchy can be everything</li> <li>9. Not sure if project developers would consider it important, but if the DNA requests the goal hierarchy, then yes</li> <li>10. to know this impact</li> <li>11. able to articulate in relation to DNA criteria &amp; indicators</li> <li>12. to come to a good project</li> <li>13. project developers follow what is required</li> <li>14. responsibility partly shifts to stakeholders, report back</li> <li>15. for additional investment, there might be other sub-goals</li> <li>16. try to meet their commitment and try to get money out of it (main issue of interest: costs)</li> <li>17. pursue their own goal</li> <li>18. technical aspects relevant</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>19. looking at economic component, getting problems if not sustainable</li> </ol>
Others	17	<ol style="list-style-type: none"> <li>1. different position, specific group in this hierarchy, partially, not generally, not interested in the whole picture</li> <li>2. 'others' can provide info</li> <li>3. Not for stakeholders because each stakeholder has its specific interest</li> <li>4. stakeholders, if involved, depends on the project</li> <li>5. much the government of the country</li> <li>6. have their own priorities which are maybe not conform, but they are the weak partners</li> <li>7. challenge by stakeholders</li> <li>8. for evaluation</li> <li>9. EB: how targets to be measured</li> <li>10. evaluation (internal and external by others, e.g. DOE)</li> <li>11. e.g. investor as a sponsor</li> <li>12. policy of different means, info, whether want or not, evaluation, who is how much affected</li> <li>13. positive results of the project</li> <li>14. The national government: This is the first question of all. Relating to the Kyoto Protocol and emission reductions</li> <li>15. feedback from them to the managers (those managing have to know), no bias, not only one point of view</li> <li>16. participation in activity, incentive for them</li> <li>17. regarding "others", the level of usefulness can vary</li> </ol>
Other comments	9	<ol style="list-style-type: none"> <li>1. there are various tools, it's a political decision</li> <li>2. Not very clear... Speaking theoretically: it's needed, this is the aim, you want to know what you are going to achieve, try to implement</li> <li>3. should be taken into account in this country</li> <li>4. underline the benefits</li> <li>5. important for the actors: at different stages</li> <li>6. the whole CDM scheme (set-up)</li> <li>7. without comment, I believe in it</li> <li>8. All these elements to make a package of his project</li> <li>9. most important get goals right</li> </ol>
<b>Element 5 – activities</b>		
Contribute to SD	2	<ol style="list-style-type: none"> <li>1. contribute</li> <li>2. project developers should clarify the possible activities contributing to SD, should be very well defined in the PDD</li> </ol>
Compliance	9	<ol style="list-style-type: none"> <li>1. take care of compliance with DOE</li> <li>2. socialized and approved by the public</li> <li>3. for approval</li> <li>4. impossible to approve and plan otherwise, without clarity</li> <li>5. final decision to approve a project activity; reach best results</li> </ol>

		<p>in the categories</p> <ol style="list-style-type: none"> <li>6. certificates/credentials for ministries</li> <li>7. by-products, extra benefits, not just ERs, important for developers because EB has to approve it, to sign it off, that credits can be generated,</li> <li>8. compliance</li> <li>9. include the elements required, speed up approval procedure, be well prepared</li> </ol>
Consensus	3	<ol style="list-style-type: none"> <li>1. consult, workshops with beneficiaries, guarantee activity</li> <li>2. trade offs between activities, judge project, prefer: compromise, not selecting between activities</li> <li>3. DNAs and PDs have to come together (as for the goal hierarchy)</li> </ol>
Transparency	20	<ol style="list-style-type: none"> <li>1. clear definition, simplifies, clear understanding, guidance</li> <li>2. better understanding, PDDs not clearly say, represent outcomes</li> <li>3. list of activities, always helpful, good understanding of life cycle</li> <li>4. ambiguity reduced</li> <li>5. clear strategy</li> <li>6. transparency</li> <li>7. impossible to approve and plan otherwise, without clarity</li> <li>8. get to know exactly what will be done, to final goals</li> <li>9. complete picture, what involved</li> <li>10. clarity to activities</li> <li>11. clear knowledge, basic understanding, new ideas, clear definition, policy makers in the DNA-Board, clear about CDM</li> <li>12. No detail, no good project</li> <li>13. translate strategies</li> <li>14. project developers should clarify the possible activities contributing to SD, should be very well defined in the PDD</li> <li>15. to get a clear idea</li> <li>16. understood, how the activities relate to the other elements, know aspects of stages, clearly define project, relate to stakeholders</li> <li>17. should be put in the project proposal (that stakeholders can access the info)</li> <li>18. define to understand more about a goal, transparency</li> <li>19. comprehensive picture, project developers have to present solutions</li> <li>20. translate strategy into outputs, "others" want to know about the activities</li> </ol>
Involvement	1	<ol style="list-style-type: none"> <li>1. maybe integrate experts</li> </ol>
Evaluation	32	<ol style="list-style-type: none"> <li>1. to verify (but not progress of construction, this is not so relevant)</li> <li>2. 'others' provide info for assessment</li> <li>3. ex-post evaluation, ambiguity reduced</li> <li>4. particularly for evaluation, the way the agency finds out (e.g. in the EIA) whether procedures are met, no negative impacts</li> <li>5. kind of indicators for outcomes and goals, otherwise very difficult</li> <li>6. monitoring plan should be included, ex-post perhaps for evaluation</li> <li>7. for evaluation</li> <li>8. for evaluation</li> <li>9. difficult: assessment, certificates/credentials for ministries</li> <li>10. DNA not after approval, DOE or third parties (others) involve in evaluation</li> <li>11. review</li> <li>12. but for evaluation even more important to verify</li> <li>13. without this impossible to evaluate</li> <li>14. evaluation</li> <li>15. what on track or not</li> </ol>

		<ul style="list-style-type: none"> <li>16. followed by the evaluation (internal and external by others, e.g. DOE)</li> <li>17. not only goals important, activities to achieve the goals, the way must be evaluated</li> <li>18. host country yes (GHG sufficiently considered), monitoring, beneficiaries, host country has to judge, in PDD part on SD</li> <li>19. for evaluation, monitoring, activities and goals, contribute to criteria, no experience yet with negative impacts</li> <li>20. to follow-up, to measure (indicators), to define the assumptions, to see if the results have been achieved</li> <li>21. assess</li> <li>22. evaluate activities on the whole</li> <li>23. to get the indicators to monitor</li> <li>24. choose the projects</li> <li>25. better follow evolution</li> <li>26. to evaluate, to reflect dynamics</li> <li>27. defined, analyzed, understood, how the activities relate to the other elements, achieve in stages, know aspects of stages, relate to stakeholders</li> <li>28. less for evaluation because of the composition of the team, cannot evaluate all activities, but useful if evaluation is scientifically oriented / uses scientifically-based criteria (which is not very in common at the DNAs),</li> <li>29. for evaluation, to assess all benefits of the project on SD, positive and negative impacts</li> <li>30. environmental impacts can be estimated</li> <li>31. check, get it clear, DNA has to know, and check whether carried out</li> </ul> <p><b>Don't know:</b></p> <ul style="list-style-type: none"> <li>32. DNA does not ask for that, don't check if they do this or not, if you do it, you have to check it, requires a lot of activities and resources</li> </ul>
Management	32	<ul style="list-style-type: none"> <li>1. if fully defined provides means for implementing team, reflect back, what to do</li> <li>2. for implementers, developers, different people, then YES, no miscommunication</li> <li>3. provides a logical road map over specified time, frame</li> <li>4. for planning</li> <li>5. for each phase of planning</li> <li>6. reassure the whole thing, implement, during each phase, goals fulfilled?, on the way, bring together, proximity, the whole process</li> <li>7. what to do, boundaries</li> <li>8. ensure use of natural resources, financing, technological resources, in an efficient and well-coordinated way</li> <li>9. less for planning, useful for all actors regarding project design</li> <li>10. for planning very important</li> <li>11. planning</li> <li>12. what on track or not</li> <li>13. prioritize activities, plan</li> <li>14. meet goal, implementing</li> <li>15. essential, depends on project context, for developing projects, plan of actions, assurance about procedures for reaching your goals, for judgment whether goals implementable</li> <li>16. for planning, idea how the project will be</li> <li>17. to follow-up, to measure (indicators), to define the assumptions, to see if the results have been achieved</li> <li>18. must know what you'll do</li> <li>19. to put into practice</li> <li>20. helps to define problems, effects, impacts, helps to set priorities, deadlines</li> <li>21. focus on what and on how to achieve, pitfalls</li> </ul>

		<ul style="list-style-type: none"> <li>22. better follow evolution</li> <li>23. better planning</li> <li>24. gives direction</li> <li>25. to amend/change if necessary, to reflect dynamics</li> <li>26. defined, analyzed, understood, achieve in stages, know aspects of stages</li> <li>27. operationalization of the goals</li> <li>28. details are very important, plan the implementation, time table</li> <li>29. more for project planning</li> <li>30. project developers: cost, money, need for HR: plan, financial resources, when in time</li> <li>31. maybe for planning</li> <li>32. translate strategy into outputs, what is necessary and sufficient to achieve the outputs</li> </ul>
Link to other elements	13	<ul style="list-style-type: none"> <li>1. to reach the goal, more different activities or a number of activities to reach it</li> <li>2. governmental strategy be put into practice by activities</li> <li>3. goals fulfilled? on the way, bring together, proximity, the whole process</li> <li>4. like logframe, yes, could be, together with goals, the "How"</li> <li>5. logframe has its merits and shortcomings, if professional quality: govern whole reality, assumptions change, one mind-setting only = given assumptions, adjust</li> <li>6. complete picture, what involved</li> <li>7. to follow-up, to measure (indicators), to define the assumptions, to see if the results have been achieved</li> <li>8. direct link to the local development, SD: energy needs, currency savings, technology development, technology transfer</li> <li>9. to get the indicators to monitor</li> <li>10. how the activities relate to the other elements</li> <li>11. connect to sub-goals</li> <li>12. sub-activities: resources needed to achieve the goals</li> <li>13. help us to achieve outputs outlined</li> </ul>
Success	10	<ul style="list-style-type: none"> <li>1. practicality: might make it easier for you to reach what you need</li> <li>2. achieve goals, lessons learned for future</li> <li>3. ensure outcome and output</li> <li>4. measure success, expectations fulfilled?, this all supports the pyramid</li> <li>5. lead to successful projects</li> <li>6. meet goal, implementing</li> <li>7. No detail, no good project</li> <li>8. to reach the objectives / goals, to amend/change if necessary</li> <li>9. right activities to achieve goal</li> <li>10. help us to achieve outputs outlined, what is necessary and sufficient to achieve the outputs</li> </ul>
Difficulties	4	<ul style="list-style-type: none"> <li>1. important that the tool doesn't limit the project</li> <li>2. difficult: assessment</li> <li>3. validator not accredited for monitoring of SD (quality)</li> <li><b>Don't know:</b></li> <li>4. DNA does not ask for that, don't check if they do this or not, if you do it, you have to check it, requires a lot of activities and resources.</li> </ul>
DNAs	16	<ul style="list-style-type: none"> <li>1. evaluation; usually more global, do not downscale, for the big picture, would make general statements more concrete</li> <li>2. maybe host country DNAs, but not sure, if they monitor this</li> <li>3. for evaluation, results, impacts</li> <li>4. DNAs for SD check</li> <li>5. after letter of approval no more, no monitoring of SD</li> <li>6. Annex I DNAs never get to see the project, see only paper, no control about actual implementation</li> </ul>

		<ol style="list-style-type: none"> <li>7. followed by the evaluation (internal and external by others, e.g. DOE)</li> <li>8. no more involved</li> <li>9. host country yes (GHG sufficiently considered), monitoring, beneficiaries, host country has to judge, in PDD part on SD</li> <li>10. authority, to assess, more than ordinary, DNA goes to industry and to sensitize them</li> <li>11. maybe good for DNAs, but would need additional resources, could be time consuming</li> <li>12. DNAs have to monitor</li> <li>13. have the vision</li> <li>14. check, get it clear, DNA has to know, and check whether carried out</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>15. This is not the role of the DNAs (meaning Annex I) to judge, therefore one has to rely on the host countries, but the SMA is a realistic approach, imagine that it might be useful</li> <li>16. DNA does not ask for that, don't check if they do this or not, if you do it, you have to check it, requires a lot of activities and resources</li> </ol>
Project developers	18	<ol style="list-style-type: none"> <li>1. do it</li> <li>2. I think so, to orient them</li> <li>3. for planning, manage, structure</li> <li>4. for each phase of planning</li> <li>5. behave according to activities planned</li> <li>6. have to prove to the investor what they are doing, to the DNA their contribution</li> <li>7. review by developer</li> <li>8. everything at the risk of the project developer, focus on project, more confidence</li> <li>9. by-products, extra benefits, not just ERs, important for developers because EB has to approve it, to sign it off, that credits can be generated,</li> <li>10. implementing them</li> <li>11. not interested</li> <li>12. to come a good project</li> <li>13. project developers should clarify the possible activities contributing to SD, should be very well defined in the PDD</li> <li>14. project developers will not go for implementation without defining activities</li> <li>15. project developers: cost, money, need for HR: plan, financial resources, when in time</li> <li>16. define clearly what they have in mind</li> <li>17. multi-disciplinary, single actions, comprehensive picture, project developers have to present solutions</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>18. (some project developers have proposed outside activities), for them it is of course important</li> </ol>
Others	18	<ol style="list-style-type: none"> <li>1. provide info for assessment</li> <li>2. e.g. DOE, populations</li> <li>3. for others not so much, because they are mainly interested whether up and running, has to be within governmental goals, but important for transparency, relation among stakeholders improved</li> <li>4. yes, ask project proponent, documentation in Annex 3</li> <li>5. relevant for those participating in the activities (stakeholders)</li> <li>6. for stakeholders to understand (not in the process of definition)</li> <li>7. for benefits</li> <li>8. DOE or third parties (others) involve in evaluation,</li> <li>9. review by stakeholders, interested parties</li> <li>10. others help with definitions and assist in their part</li> <li>11. followed by the evaluation (internal and external by others,</li> </ol>

		<p>e.g. DOE)</p> <ol style="list-style-type: none"> <li>12. Affected/interested stakeholder: of course relevant</li> <li>13. others benefit</li> <li>14. validator not accredited for monitoring of SD (quality)</li> <li>15. positive results of the project</li> <li>16. important to understand and to see that they are not negatively affected</li> <li>17. others: those involved in the activities</li> <li>18. "others" want to know about the activities</li> </ol>
Other comments	7	<ol style="list-style-type: none"> <li>1. process: material from project owner (PDD: section on SD, describe activities there)</li> <li>2. you are not alone, climate change, impacts for environment</li> <li>3. would in other context be called instruments / measures, this is the integral part, "the project"</li> <li>4. for programmatic CDM; in the sense of the SMA, "sub-activities" of a project activity</li> <li>5. for both planning and evaluation, cannot explain why this is useful, would have to compare with and without</li> <li>6. All these elements to make a package of his project</li> <li>7. most important define activities</li> </ol>
<b>Element 6 – SMART indicators</b>		
Evaluation	51	<ol style="list-style-type: none"> <li>1. Impact, quality of proposal and implementation</li> <li>2. evaluation facilitated</li> <li>3. core for evaluation</li> <li>4. same reasons as for the usefulness of the logframe, to monitor and verify</li> <li>5. to measure achievement</li> <li>6. good tool, to evaluate in systematic manner</li> <li>7. track implementation</li> <li>8. theoretic, useful, evaluate the project, make it precise, permitted elements, performance</li> <li>9. national goals, ultimate objective is to achieve certain goals, can be anything, defined by outcomes, assess, should be specific, measurable, and tangible; is a barometer for success of project, after implementation phase, felt ex-post</li> <li>10. quantify results, if well developed, major control</li> <li>11. not comparable not for quantification, but good to clarify the picture, measure</li> <li>12. to monitor the quantity, to make it measurable</li> <li>13. generally good because it provides benchmark to evaluate the results of the activities</li> <li>14. especially for evaluation, to guarantee quality and standards</li> <li>15. this is the basis, to know whether contributed</li> <li>16. evaluation of achievements, better structure, would help during evaluation</li> <li>17. with indicators, evaluation becomes something solid</li> <li>18. lead to having historical data, define, improve, long term analysis, global, would be important, would make evaluation more extended, more work to be done</li> <li>19. define, verifiable</li> <li>20. make sure that goals are achieved</li> <li>21. measure, qualitative approach, selection and conception of projects</li> <li>22. track, evaluate results, in line with Marrakesh Accords, indicators shouldn't be very complicated, monitoring / evaluation</li> <li>23. used to examine feasibility, benchmarks, investment based on some judgment, no clear understanding of SMART indicators, not known, perhaps WB projects apply this</li> <li>24. to verify the projects</li> <li>25. without this impossible to evaluate</li> <li>26. ex-post analysis would be interesting</li> <li>27. would prefer this, "such amount", easier SD judgment</li> </ol>

		<p>28. something we could consider, indicators existing for development, should be measurable and realistic</p> <p>29. standard to evaluate, viable and comprehensive</p> <p>30. very useful, major tool, monitoring, evaluation, verify earmarked activities, executed or not, determine progress</p> <p>31. followed by the evaluation (internal and external by others, e.g. DOE)</p> <p>32. easiest way to check how the project evolves, to see how the CDM is working</p> <p>33. inform whether planned actions correspond / respond to goals or not, complex job</p> <p>34. measure points along the way, whether on track, valuable feedback on process, outcome hard to measure, especially important, progress, a way to define outcomes, SD is a broad concept, hard to measure, indicators are proxy for a goal</p> <p>35. measurable and timed very important, evaluate, show development, from start until end</p> <p>36. Project developers have not to define the indicators, because the DNA provides the indicators and helps the project developer to refine them (until the assumptions), the project has to be conform with them (elaborate the project document that it meets the criteria and indicators defined by the DNA)</p> <p>37. have to measure the activities and results with indicators, to measure the advance and if they accomplish, for internal and external purpose</p> <p>38. should be considered for the proceedings to be established, benefits, logic model, follow-up through visits</p> <p>39. very helpful and fundamental for the implementation of the project activity, monetize the project activity, has the development been achieved?</p> <p>40. if well developed, shows what important, sector to monitor</p> <p>41. measure outcome, see where pitfalls are</p> <p>42. evaluate impact, contribution to SD</p> <p>43. to evaluate, keep record, reference point, more for evaluation</p> <p>44. to prove to see what has been achieved</p> <p>45. matrix, make it measurable, criteria, checklist, if wished a benchmark can be established</p> <p>46. mostly recognizable, a number can be followed (follow-up), the easiest way</p> <p>47. monitor whether complying</p> <p>48. monitor, achieve targets</p> <p>49. show to control, monitor implementation, on the track, advanced</p> <p>50. very useful, for each criterion, min. condition to be fulfilled, for socio-economic balance</p> <p><b>Don't know:</b></p> <p>51. for evaluation, without indicators no progress evaluation, to reach goals on time</p>
Management	27	<p>1. planning facilitated</p> <p>2. track implementation</p> <p>3. indicators could be useful for project planning, focus, how to explain, measure</p> <p>4. with indicators, planning becomes something solid</p> <p>5. good to clarify the picture</p> <p>6. are not indispensable, but useful, for project planning</p> <p>7. reassure the whole thing, implement, during each phase, goals fulfilled?, on the way, bring together, proximity, the whole process</p> <p>8. define, all planning, the basic</p> <p>9. make sure that goals are achieved</p> <p>10. provides guidance when up and running</p> <p>11. to plan the projects</p> <p>12. not so much for planning</p>

		<ul style="list-style-type: none"> <li>13. use for planning</li> <li>14. picture where you want to go, what to achieve</li> <li>15. measure points along the way, whether on track, valuable feedback on process, outcome hard to measure, especially important, progress, a way to define outcomes, SD is a broad concept, hard to measure, indicators are proxy for a goal</li> <li>16. enable project more, better planning</li> <li>17. to put into practice</li> <li>18. very helpful and fundamental for the implementation of the project activity, monetize the project activity, has the development been achieved?</li> <li>19. if well developed, shows what important, sector to monitor</li> <li>20. measure outcome, see where pitfalls are</li> <li>21. indicators for precision, evolution of the projects, engagement, certify, performance, what has been announced, put into practice, CERs</li> <li>22. planning well</li> <li>23. what to achieve, measure, how much shortfall and where, to know for next planning what was too little and what too ambitious</li> <li>24. Planning process</li> <li>25. more for evaluation, sometimes difficult for planning, comes with experience, unforeseen things,</li> <li>26. mostly recognizable, a number can be followed (follow-up), the easiest way</li> <li>27. capacity of project, very big: needs a lot of resources, to adjust</li> </ul>
Transparency and proof	3	<ul style="list-style-type: none"> <li>1. make it more transparent,</li> <li>2. to prove to see what has been achieved</li> <li>3. provide evidence / proof</li> </ul>
Success	10	<ul style="list-style-type: none"> <li>1. provide information to determine success</li> <li>2. is a barometer for success of project, after implementation phase, felt ex-post</li> <li>3. make sure that goals are achieved</li> <li>4. would be desirable, for achieving the goals</li> <li>5. successful path</li> <li>6. better quality</li> <li>7. to reach goals on time</li> <li>8. achieve what is intended</li> <li>9. achieve targets</li> <li>10. achieve what is intended</li> </ul>
Structure	3	<ul style="list-style-type: none"> <li>1. better structure</li> <li>2. good structure</li> <li>3. systematic indicators and output orientation</li> </ul>
Link to other elements	5	<ul style="list-style-type: none"> <li>1. goals fulfilled? on the way, bring together, proximity, the whole process</li> <li>2. Starting point, for each member state, <u>each goal</u> needs an indicator</li> <li>3. helps to define criteria, clear, concrete</li> <li>4. inform whether planned actions correspond / respond to goals or not, complex job</li> <li>5. match indicator and objective</li> </ul>
Involvement	1	<ul style="list-style-type: none"> <li>1. merits participation of experts, commitment</li> </ul>
Financing	1	<ul style="list-style-type: none"> <li>1. to finance the project</li> </ul>
Compliance	1	<ul style="list-style-type: none"> <li>1. indicators very important for project approval</li> </ul>
Difficulties	6	<ul style="list-style-type: none"> <li>1. sometimes too structured, complicated, not comparable not for quantification, but good to clarify the picture, indicators: danger: maximize, adapt reality to the tool</li> <li>2. if well-defined, should be realistic!</li> <li>3. volume of CDM projects: ex-post analysis would be interesting, practicality: might be complicated: effort in setting up too high, value of indicators in general, depends on the</li> </ul>

		<p>level of detail of analysis, simple approach can be superior to analytical / theoretical approach, SMART might be too theoretical</p> <ol style="list-style-type: none"> <li>4. not so easy to develop SD indicators, difficult to quantify, to know successful or not</li> <li>5. depends on how deep project developer willing to go into the process, perhaps consultant needed, sometimes simple structure more convenient</li> <li>6. measurement difficult in SD</li> </ol>
DNAs	14	<ol style="list-style-type: none"> <li>1. national goals (DNA), ultimate objective achieve certain goals, can be anything, defined by outcomes, assess</li> <li>2. DNAs: not so much, rather interested in ERs (Annex I), would have to define indicators, results would be interesting, probably for the host country</li> <li>3. for the DNA defined top-down</li> <li>4. DNAs: targets, SD criteria, own interests</li> <li>5. DNAs: not their role, indirectly</li> <li>6. for host DNAs, measure, qualitative approach, selection and conception of projects</li> <li>7. DNAs: limitation due to their role, just EIA</li> <li>8. followed by the evaluation (internal and external by others, e.g. DOE)</li> <li>9. responsibility that this is incorporated</li> <li>10. for host country perhaps if SD criteria defined</li> <li>11. Project developers have not to define the indicators, because the DNA provides the indicators and helps the project developer to refine them (until the assumptions), the project has to be conform with them (elaborate the project document that it meets the criteria and indicators defined by the DNA)</li> <li>12. engagement of the countries</li> <li>13. to evaluate, keep record, reference point</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>14. This is not the role of the DNAs (meaning Annex I) to judge, therefore one has to rely on the host countries, but the SMA is a realistic approach, imagine that it might be useful</li> </ol>
Project developers	12	<ol style="list-style-type: none"> <li>1. have to understand responsibility, not yet, so far 50/50</li> <li>2. project developers interested in CERs</li> <li>3. project developers have their own goals and timeline</li> <li>4. project developers: will be evaluated</li> <li>5. project developers: aims of developer, for his own definition and criteria,</li> <li>6. very useful for the project developer (confidence)</li> <li>7. participants can use indicators, current practice: they don't make any efforts to simplify the description, "less steam", general, verbal, vague, like a matrix would be better</li> <li>8. Project developers have not to define the indicators, because the DNA provides the indicators and helps the project developer to refine them (until the assumptions), the project has to be conform with them (elaborate the project document that it meets the criteria and indicators defined by the DNA)</li> <li>9. project developers: fulfill commitments</li> <li>10. indicators for precision, evolution of the projects, engagement, certify, performance, what has been announced, put into practice, CERs</li> <li>11. accountable for progress</li> <li>12. definition of indicators is part of the CDM guidelines he has to fulfill, have to know the indicators, check them</li> </ol>
Others	15	<ol style="list-style-type: none"> <li>1. others part of the structure, (formed criteria)</li> <li>2. national stakeholders: institutions, individuals, national political context</li> <li>3. others: DOEs, employees</li> <li>4. maybe others, not sure, because completely different backgrounds and perceptions of the project, or maybe for</li> </ol>

		<p>someone else analyzing the stakeholders</p> <ol style="list-style-type: none"> <li>5. useful to involve 'others' in the development</li> <li>6. Stakeholders as appropriate</li> <li>7. for others: make it more transparent, would help during evaluation</li> <li>8. others: I don't think they use them, judge by tangible things</li> <li>9. others: financing part</li> <li>10. stakeholders: mainly those participating financially in the project and direct stakeholders, others only indirectly: e.g. local stakeholders rather interested in environment, others interested in getting employment</li> <li>11. others help with definitions and assist in their part</li> <li>12. followed by the evaluation (internal and external by others, e.g. DOE)</li> <li>13. detailed = good for others</li> <li>14. have to know what to achieve and what achieved, feedback</li> <li>15. DOE rather looks at mitigation, not at SD</li> </ol>
Other comments	10	<ol style="list-style-type: none"> <li>1. as mentioned in the document</li> <li>2. useful because of function of indicators, SMART not known, capacity? Applicable? Looking forward to the results of the PhD thesis</li> <li>3. everywhere SMART indicators for projects, cannot explain in more detail</li> <li>4. All these elements to make a package of his project</li> <li>5. very important, well prepared/done, go through quickly, also at international level</li> <li>6. can't understand, because SMART is not known</li> <li>7. think yes, don't know for CDM why</li> <li>8. but not clear why useful, don't really understand the concept of SMART, but indicators very important for project approval</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>9. don't know SMART indicators yet</li> <li>10. depends on the indicators, how they are established, danger that SD is expressed in 'numbers' only and loses meaning</li> </ol>
<b>Element 7 – discussion of underlying assumptions</b>		
General	2	<ol style="list-style-type: none"> <li>1. this is basic, nothing new, primary</li> <li>2. enable project, for all projects, helps in doing project</li> </ol>
Questioning	1	<ol style="list-style-type: none"> <li>1. design with questioning, questioning the basics</li> </ol>
Compliance	2	<ol style="list-style-type: none"> <li>1. advance, not to be rejected</li> <li>2. allows preventing conflicts: see decree of approbation</li> </ol>
Pluralism	5	<ol style="list-style-type: none"> <li>1. provides richer visions of the process, points of view, make it broader, more equilibrated result</li> <li>2. technical criteria, more elements for judgment, more specific criteria of SD</li> <li>3. PDD includes public consultation, inform / different ideas, consultation in workshops</li> <li>4. different angle</li> <li>5. getting insight from stakeholders</li> </ol>
Consensus	11	<ol style="list-style-type: none"> <li>1. consensus and communication, 1 group in this country in the Committee to discuss</li> <li>2. consensus, agreement</li> <li>3. everybody has to agree, several ideas</li> <li>4. related to element 2, one of the first issues to look at, agreement, support or not</li> <li>5. success depends on support (at least 95% of those involved), some areas of concern, common ground, changes of environment, trade offs, agree (also equity aspects)</li> <li>6. seems confrontational approach, constructed situation, what is the value for evaluation?</li> <li>7. at local level, interesting to build consensus</li> <li>8. allows preventing conflicts</li> <li>9. leads to agreement</li> </ol>

		10. there has to be a consensus <b>No:</b> 11. raise awareness from public, but can create dissent
Focus	1	1. allows you to focus on major things, discard minor assumptions
Structure	3	1. useful to structure (maybe also for 'others' a good tool), main underlying assumptions not always clearly stated, if used in general getting more complex, but for SD useful 2. thoughts, goals: better formulate 3. helps to structure, put in order decision criteria
Understanding	12	1. better understanding of the project 2. discussion around different opinions of groups helps to obtain information, understand the differences between the stakeholders / beneficiaries 3. strengthen the need to understand what sort of projects need to be developed 4. doubts are discussed by parties interested, explained, conclusion drawn, good if one is not sure about something, explain upfront, otherwise assuming things that are not so 5. I would like to consider this, underlying ideas, stakeholder consultation, know what opinions they have 6. getting insight from stakeholders 7. have to understand the project's limitations and advantages, what strengthens and weakens the project, especially in developing countries due to limited data quality, availability, e.g. assumptions on number of households 8. to achieve a better common understanding 9. not to start implementing something inappropriate, prior to approval, understand circumstances, to make "others" understand better 10. for all elements, more information, more understanding of the project, positive and negative impacts 11. understand output from project , environmental protection, SD 12. can find real answers for difficult questions, if right stakeholders then in the right way
Link to other elements	1	1. basis of activities
Risks	13	1. risk, know it before, go smoothly 2. what could happen, e.g. financing from Partner B, if this does not come, no project, can decide upon the entire project 3. wrong / flawed assumptions are identified, prevents waste of resources 4. doubts are discussed by parties interested, explained, conclusion drawn, good if one is not sure about something, explain upfront, otherwise assuming things that are not so 5. might do this if PDD has doubts 6. critical points, 'bottle-neck', logframe 7. assess: extremely important, if fundamental assumptions incorrect, money lost 8. allows preventing conflicts 9. close gaps 10. helpful for developers to identify weaknesses, confront them with it, e.g. during the stakeholder consultation 11. not to start implementing something inappropriate 12. e.g. landfill uses, reaction from the local population, risks have to be evaluated 13. evaluation of assumptions good to identify the gaps
Certainty, success	15	1. increases ability of good scenarios, baseline scenarios, additionality, also for SD 2. if convinced of the project, one might get blind to weaknesses, to make sure that it is conform to legislation and that everything what has been assured in the contract will be

		<p>supplied, Annex I DNAs buy 'commodity good', need to be able to trust</p> <ol style="list-style-type: none"> <li>3. assumptions should correspond to the actual situation, important to know how certain an assumption is, this is an indication for success or failure</li> <li>4. to avoid wrong decisions, to ensure success of the project</li> <li>5. any project needs to know starting assumptions, to achieve the goals, and to implement activities well 28: optimal situations</li> <li>6. helps in taking more solid decisions, provides richer visions of the process, points of view, make it broader, more equilibrated result</li> <li>7. one of the main pillars, for successful projects</li> <li>8. success for the project developer</li> <li>9. wrong / flawed assumptions are identified, prevents waste of resources, of time in arguing</li> <li>10. success or failure</li> <li>11. come up with different scenarios for outcome of the project</li> <li>12. make better projects</li> <li>13. conclusion more healthy</li> <li>14. strengthen</li> <li>15. foresee impacts, determine whether achievable</li> </ol>
Involvement	9	<ol style="list-style-type: none"> <li>1. several ideas to consider, could be useful in the public consultation process</li> <li>2. to identify stakeholders and spread the knowledge on the project, see if there are comments, estimate possible impacts, a more complete analysis, joint process, not only wait for stakeholder comments</li> <li>3. several ideas</li> <li>4. this is a way to more structurally involve stakeholders</li> <li>5. to "socialize" the planning procedure</li> <li>6. engage stakeholders, can be used in stakeholder dialogue, not just company-internally, could e.g. be put on website and ask for contributions</li> <li>7. maybe even vice versa before the proposal together with the stakeholders, in dialogue</li> <li>8. some sort of discussion, each party, encourage ideas/opinions, enrich exchange of view</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>9. raise awareness from public, but can create dissent</li> </ol>
Evaluation	17	<ol style="list-style-type: none"> <li>1. screening the project</li> <li>2. maybe in this country for the local government, to check feasibility (for the EIA)</li> <li>3. but to follow-up there is not enough capacity</li> <li>4. this discussion could affect the policy of the DNA and the country</li> <li>5. evaluation</li> <li>6. more elements for judgment, more specific criteria of SD</li> <li>7. beneficial for evaluation</li> <li>8. DNAs: to judge, indicators affected, monitoring of the outcomes, benefits for SD</li> <li>9. for evaluation to see whether the CDM project activity is feasible like that, and to verify whether the goals can be achieved</li> <li>10. not so much for evaluation</li> <li>11. monitor, evaluation based on the assumed</li> <li>12. assess: extremely important, if fundamental assumptions incorrect, money lost</li> <li>13. It will assist in the evaluation process of different alternatives</li> <li>14. monitoring (have in mind)</li> <li>15. evaluation of assumptions good to identify the gaps</li> <li>16. for evaluation</li> <li>17. assess suitability, could be used at later stages to verify and</li> </ol>

		check indicators
Management	18	<ol style="list-style-type: none"> <li>1. better planning</li> <li>2. Useful for planning</li> <li>3. this discussion could affect the economies of the owner</li> <li>4. organize the process</li> <li>5. beneficial for planning</li> <li>6. to "socialize" the planning procedure</li> <li>7. important for planning, time required</li> <li>8. that the project developers make an effort during the planning of the project to include all elements in the project documents</li> <li>9. for project planning</li> <li>10. project developer will loose neither time nor money</li> <li>11. enable project, for all projects, helps in doing project</li> <li>12. to put into practice, has to be taken into account</li> <li>13. on project-by-project basis, improve the project activities</li> <li>14. planning stage, what assumed, monitor</li> <li>15. improve planning</li> <li>16. definitely for planning because working on certain assumptions, tactical measures, monitoring (have in mind)</li> <li>17. for planning</li> <li>18. project planning (project developer), very important at the planning stage</li> </ol>
Transparency	3	<ol style="list-style-type: none"> <li>1. attempt to create an open and transparent procedure</li> <li>2. to clarify actions</li> <li>3. clarifies interpretation of SD</li> </ol>
Difficulties	13	<ol style="list-style-type: none"> <li>1. perhaps too much, results are more detailed than in a graph</li> <li>2. maybe difficult due to political past (Soviet Union), maybe difficult to implement, used to a top-down structure</li> <li>3. but requires a lot of education to involve people, rural population could be more difficult to involve</li> <li>4. analysis of trade-offs lacking</li> <li>5. problem: conservative private sector not interested to publish</li> <li>6. you may touch very sensitive political data, may not be convenient, together with stakeholders it could be already difficult for a company</li> <li>7. perhaps works in multinationals, but a pig farm owner?</li> <li>8. seems confrontational approach, constructed situation, what is the value for evaluation? complex, good understanding of participants needed, have to be well informed, is it pragmatic? not seen applied, role play, requires time and collection of results, needs facilitator</li> <li>9. but you cannot define neat lines, difficult to define what is more important and less important, the outcome is rather subjective</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>10. very theoretical to obtain a representation of the world</li> <li>11. perhaps too ambitious, how would the results look like?</li> <li>12. can create dissent, would take too much time, slow down</li> <li>13. I cannot see the utility, whether this would change something</li> </ol>
DNAs	8	<ol style="list-style-type: none"> <li>1. DNA not very involved in this process</li> <li>2. DNAs: to judge, indicators affected, monitoring of the outcomes, benefits for SD</li> <li>3. very important for host DNAs</li> <li>4. policy makers mainly interested in analysis, DNAs have just administrative function due to MA</li> <li>5. Not DNA involved in it, no aid package, DNA to capture interest</li> <li>6. for host country DNAs, that's fundamental (e.g. how hydropower affects native population), there has to be a consensus, DNAs are the judge</li> <li>7. evaluation (DNA), project planning (project developer), very important at the planning stage</li> </ol> <p><b>Don't know:</b></p>

		8. This is not the role of the DNAs (meaning Annex I) to judge, therefore one has to rely on the host countries, but the SMA is a realistic approach, imagine that it might be useful
Project developers	15	<ol style="list-style-type: none"> <li>1. roundtable discussion, SD issues to be defended by the project developers</li> <li>2. could be useful for project developers</li> <li>3. for project developers not sure if useful because DNA not very involved in this process</li> <li>4. success for the project developer</li> <li>5. problem: conservative private sector not interested to publish</li> <li>6. analysis setting up strategy and response from parties, very useful for project developers to lead to direct impact</li> <li>7. that the project developers make an effort during the planning of the project to include all elements in the project documents</li> <li>8. inside the company convenient, together with stakeholders it could be already difficult for a company</li> <li>9. for developers not in such an abstract way, perhaps works in multinationals, but a pig farm owner?</li> <li>10. project developer will loose neither time nor money, at local level, interesting to build consensus</li> <li>11. leave to project developers, private sector</li> <li>12. project developers will put what the DNA requires</li> <li>13. helpful for developers to identify weaknesses, confront them with it, e.g. during the stakeholder consultation</li> <li>14. discuss local context, conditions, foresee impacts</li> <li>15. project planning (project developer), very important at the planning stage</li> </ol>
Others	10	<ol style="list-style-type: none"> <li>1. roundtable discussion, technical experts to objectively evaluate</li> <li>2. but requires a lot of education to involve people, rural population could be more difficult to involve</li> <li>3. maybe also for 'others' a good tool</li> <li>4. clarify issues for stakeholders, SD not against stakeholders, for the sake of their community</li> <li>5. this is a way to more structurally involve stakeholders</li> <li>6. attempt to create an open and transparent procedure</li> <li>7. could be interesting for others such as fond managers</li> <li>8. others only interested in impact</li> <li>9. others will put what the DNA requires</li> <li>10. others: those affected will benefit</li> </ol>
Other comments	10	<ol style="list-style-type: none"> <li>1. this element is important, but not so important as the others, because the country will mainly replicate successful project activities</li> <li>2. yes, has to change</li> <li>3. is not written in the procedures</li> <li>4. the word of assumptions not clear, better word: "objectives"? each objective contains a value judgment, → assumptions are not objectives</li> <li>5. to be undertaken asap after decree approval, inform about CDM</li> <li>6. depends on the project: for biocarbon it is important, for solar perhaps not so much, but it has to be analyzed in any case</li> <li>7. if not sufficient data, maybe for vague projects</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>8. not used, impacts?</li> <li>9. Did not understand much, explication, does not know whether this is possible, applicable, objective?</li> <li>10. less: theoretical assumptions, perhaps too complicated, with our minds, not as a chart, not systematically</li> </ol>
<b>Recommendation</b>		
Test it first	3	<ol style="list-style-type: none"> <li>1. after assessing it, if clear and helpful</li> <li>2. but has to be tested in practice first</li> </ol> <p><b>Don't know:</b></p>

		3. would have to test it first
More details	7	<ol style="list-style-type: none"> <li>1. but to know more profoundly</li> <li>2. have to understand well, examples</li> <li>3. more details would be necessary, completed work</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>4. would have to know more details</li> <li>5. need to examine further</li> <li>6. more information, good ideas</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>7. more info needed to be considered, time component crucial</li> </ol>
Political decision	2	<ol style="list-style-type: none"> <li>1. if the secretariat decided something like that, this would be helpful for the DNAs</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>2. would be due to political decisions, but seems interesting, it's broader</li> </ol>
Applicability	8	<ol style="list-style-type: none"> <li>1. more practicable and applicable (EE)</li> <li>2. if applicable, feasible</li> <li>3. plus applicable</li> <li>4. apply, put into practice</li> <li>5. useful, but will it be applicable?</li> <li>6. if pragmatically applied, could be useful (for the DNA and for the project developer) to look at large hydro and perhaps even for other projects</li> <li>7. pragmatic approach</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>8. how applicable to CDM approval process, whether it makes process more efficient</li> </ol>
Adapt	7	<ol style="list-style-type: none"> <li>1. It needs to be adapted to conditions: registration, country specific procedures, etc.</li> <li>2. adapt</li> <li>3. can be adapted to each country</li> <li>4. flexible</li> <li>5. implementation in host countries is a little bit different, adapt to real situation, experience, and modify if needed</li> <li>6. SD not straight to define, very good, danger in trying in prescriptive basis, never the content</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>7. to be applied country by country, not globally, to be adapted to the country context,</li> </ol>
Simplify	3	<ol style="list-style-type: none"> <li>1. but would have to simplify for most cases, especially for forestry projects (working with indigenous communities)</li> <li>2. Good, develop it in a more simple way, some problems of understanding, getting more rational, but better without description rather a list such as "do this, do that"</li> <li>3. simplifies, you consolidated the approach now, much easier</li> </ol>
Quality	2	<ol style="list-style-type: none"> <li>1. promotes good projects</li> <li>2. definitely, need to better assess SD in the CDM projects</li> </ol>
Risks	2	<ol style="list-style-type: none"> <li>1. helps to prevent much, better to plan, where problems</li> <li>2. identify the risks</li> </ol>
Transparency	2	<ol style="list-style-type: none"> <li>1. transparency, very useful</li> <li>2. clarity</li> </ol>
Structure	11	<ol style="list-style-type: none"> <li>1. logic, constructed</li> <li>2. clear way, all elements</li> <li>3. logic</li> <li>4. diagrams, tools: good, more structured,</li> <li>5. structure for project planning and design, last element particularly new, seems to add a lot of value</li> <li>6. clear sequence</li> <li>7. from what I read, very good approach, very important approach to sustain, helps to be systematic</li> <li>8. DNA analyses relying on experts, make it a systematical analysis, helps from where to start to analyze</li> </ol>

		<p>9. good, quite logical, flowing logically, systematic</p> <p>10. Without any doubt, very interesting approach, very nice, simplifies, makes easier for developers and the DNAs to get it in material, using some of the elements, but you consolidated the approach now, much easier, builds capacity for the DNA, no gaps, full document, package</p> <p><b>Don't know:</b></p> <p>11. general idea is a systematic planning approach</p>
Guidance	14	<p>1. helps develop and evaluate</p> <p>2. helps to get an idea of reality, every country special case</p> <p>3. Helps to take any decision</p> <p>4. facilitates argumentation, purpose, demonstrate, DNA, actors, prior analysis</p> <p>5. it will provide much needed guidance, directions for DNAs, project developers, others</p> <p>6. at the current state a bit ambiguous in this country, because there are no indicators to see whether there are achievements, to see how strong the contribution is, e.g. the contribution could be small (e.g. infrastructure), would be very good to implement such an approach as the SMA, there are already some general criteria (e.g. reduction of poverty) and these could be taken together to contribute to a broader goal (e.g. SD)</p> <p>7. 1st: clarity, concrete measures, success / failure on SD, 2nd: helps to make everything for decision</p> <p>8. why not, can really help to achieve objectives and analyze the project activity,</p> <p>9. how to implement results of research, CDM might be one vehicle</p> <p>10. (development of the CDM some years ago), how to implement national and international guidelines, how to involve stakeholders</p> <p>11. validation of the PDD</p> <p>12. very important to analyze systematically</p> <p>13. would be interesting to have a tool for assessment, for the DNAs in the host countries, to be conform with national legislation</p> <p><b>Don't know:</b></p> <p>14. for people to decide what they consider useful</p>
Stakeholders	3	<p>1. visibility, manifold points of view, key are stakeholders for analysis, for evaluation</p> <p>2. assures that stakeholders represented</p> <p><b>Don't know:</b></p> <p>3. you made a big effort, I'm not sure that I read the whole text correctly, but I'm convinced that all actors have to be included in all project stages</p>
Comprehensive	7	<p>1. all important aspects taken into account</p> <p>2. contains all critical, decisive elements</p> <p>3. Its elements are important for everything</p> <p>4. take into account the whole context</p> <p>5. of course, seems very complete, for everything that the project requires</p> <p>6. OK, covered all aspects and roles of players</p> <p>7. comprehensive</p>
Annex I	3	<p>1. absolutely, for the SD check, don't agree to leave this completely to the developing countries, risk of a race-to-the-bottom</p> <p>2. but not for Annex I DNAs</p> <p><b>Don't know:</b></p> <p>3. Not the task of this Annex I DNA to judge: but the SMA looks good</p>
One option	3	<p>1. CDM needs to have standard assessment system, for assessment the input of different ideas needed, including my</p>

		<p>approach</p> <p>2. any approach that assesses project activities in the same way is recommendable</p> <p><b>Don't know:</b></p> <p>3. different tools for different actors (complex or simple), for several cases, what will be the final product and its added value?</p>
General	5	<p>1. very general approach for specific case of SD in CDM projects (for DNAs)</p> <p>2. it is specific</p> <p>3. could be very useful, even in general</p> <p><b>Don't know:</b></p> <p>4. (problems with answering methodology to assess SD) to what extent it would help to develop SD criteria? General management science</p> <p><b>No:</b></p> <p>5. too general elements, but this is personal view, no need for industry of this Annex I country</p>
Effort	4	<p>1. the devil is in the detail, could mean much more work</p> <p>2. The question is how far it can be applied, how sophisticated and complex it should be, how many details, how many goals you want to check, will depend on resources and, even more on what will be useful for the future</p> <p>3. as simply as possible</p> <p><b>No:</b></p> <p>4. time component crucial</p>
Methods	1	<p><b>Don't know:</b></p> <p>1. marginal logic is difficult, utility: quantitative would be desirable for the host countries, if iterative process to reflect preferences, no problems</p>
For whom	5	<p>1. not for this DNA, maybe for some countries, for project developers, might help, at the beginning a lot of info provided, but it's a lip serve, filling pages</p> <p>2. For project developers very useful, but just to a certain extend for the DNA, because of its role (holistic approach to SD)</p> <p>3. top-level analysis</p> <p>4. for project developers, more directed to a person developing the project with a strong SD part</p> <p>5. for the DNA and for the project developer</p>
Other comments	25	<p>1. perhaps in some cases could be applied, for instance for the scenarios of use</p> <p>2. maybe other DNAs more ideas on this approach?</p> <p>3. concerning the survey with the DNAs: suits this transatlantic purpose</p> <p>4. without thinking so much</p> <p>5. necessary</p> <p>6. useful, understandable</p> <p>7. quite useful</p> <p>8. very interesting, right away no negative things noticed, for our case many useful ideas, especially the goals and the indicators</p> <p>9. I love it</p> <p>10. for developers, too, has strengths for those financing projects,</p> <p>11. from what the interviewee read, yes, implement under indicators, criteria</p> <p>12. The approach is not only to be recommended but also to be used. Any unsustainable management leads to a non-viable exploitation and to the ruin of the foundations on which the society is build</p> <p>13. good for project and country if SD</p> <p>14. specific, covers many interesting aspects</p>

		<p>15. convincing</p> <p>16. creative aspects of the SMA</p> <p>17. this helps always, better to have it in French</p> <p>18. African countries heavily impacted by climate change, will not be able to compete with big CDM markets, for African countries main concern is SD, the idea is great</p> <p>19. useful, convincing, the whole thing, sound</p> <p>20. very important elements</p> <p>21. I think, because very clear, not sure about goal hierarchy</p> <p><b>Don't know:</b></p> <p>22. don't want to provide an opinion on this question</p> <p>23. because we work with different approach, SMA is attacking problem differently, chart to compare the approaches</p> <p>24. maybe yes, cannot respond right now, will ask for feedback from all team members and from stakeholders and will send me responses until end of April</p>
<b>Use</b>		
Test it first	4	<p>1. would like to test it to see whether useful</p> <p>2. after assessing it,</p> <p><b>Don't know:</b></p> <p>3. would have to test it first</p> <p>4. at this time, need to examine further</p>
More information	6	<p>1. more examples, case studies</p> <p>2. have to understand well, examples</p> <p><b>Don't know:</b></p> <p>3. more info (e.g. how this could relate to the SD criteria of the country) would be helpful</p> <p>4. I don't know what would happen, how this could match, in each criterion how to implement</p> <p>5. more information, good ideas</p> <p>6. open questions and don't have much experience so far</p>
Input for proceedings	1	<p>1. very probably going to use for the redefinition of the proceedings</p>
Political decision	5	<p>1. If he gets the chance (as he's not the decision maker), might be more easy in Western countries to introduce</p> <p>2. but this is no binding statement, if useful, we will use it</p> <p>3. if the secretariat decided something like that, this would be helpful for the DNAs</p> <p><b>Don't know:</b></p> <p>4. due to political decisions, but seem interesting, it's broader</p> <p>5. this is a team decision, a political decision</p>
Applicability	3	<p>1. apply, put it into practice</p> <p>2. if simple to apply</p> <p><b>Don't know:</b></p> <p>3. how applicable to CDM approval process, whether it makes process more efficient</p>
Adapt	3	<p>1. It needs to be adapted to conditions: registration, country specific procedures, etc.</p> <p>2. adapt</p> <p>3. perhaps to be adapted</p>
Simplified	4	<p>1. simplified, definitely</p> <p>2. simplified model can be applied in a quite short period of time</p> <p><b>Don't know:</b></p> <p>3. level of detail? Operative? Applicability? Simplify the complex approach</p> <p>4. if it's more simple and easier to follow, yes</p>
Comprehensive	4	<p>1. Its elements are important for everything</p> <p>2. contains all critical, decisive elements</p> <p>3. OK, covered all aspects and roles of players</p> <p>4. all points are covered</p>
Quality	1	<p>1. promotes good projects</p>
Risks	2	<p>1. helps to prevent much, better to plan, where problems</p>

		2. identify the risks
Structure	4	<ol style="list-style-type: none"> <li>1. clear way, all elements</li> <li>2. DNA analyses relying on experts, make it a systematical analysis, helps from where to start to analyze</li> <li>3. I think, because very clear, not sure about goal hierarchy</li> <li>4. good, quite logical, flowing logically, systematic</li> </ol>
Voluntary	1	<ol style="list-style-type: none"> <li>1. as long as it is voluntary, it would help the DNA to assess the project</li> </ol>
Guidance	9	<ol style="list-style-type: none"> <li>1. helps develop and evaluate</li> <li>2. Helps to take any decision</li> <li>3. bear in mind to set goals, required for SD, want to have an approach to follow, for consistent processing of CDM project activities</li> <li>4. at the current state a bit ambiguous in this country, because there are no indicators to see whether there are achievements, to see how strong the contribution is, e.g. the contribution could be small (e.g. infrastructure), would be very good to implement such an approach as the SMA, there are already some general criteria (e.g. reduction of poverty) and these could be taken together to contribute to a broader goal (e.g. SD)</li> <li>5. why not, can really help to achieve objectives and analyze the project activity</li> <li>6. validation of the PDD</li> <li>7. very important to analyze systematically</li> <li>8. (development of the CDM some years ago), how to implement national and international guidelines, how to involve stakeholders</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>9. Yes and no, as a project developer, I would use it as a point of reference. As a DNA I don't see the contribution as a requirement, as a point of reference yes.</li> </ol>
Stakeholders	2	<ol style="list-style-type: none"> <li>1. visibility, manifold points of view, key are stakeholders for analysis, for evaluation</li> <li>2. for communities and to measure the social benefit</li> </ol>
General	3	<ol style="list-style-type: none"> <li>1. same reasons; for CDM project activities in developing countries, but perhaps also for JI</li> <li>2. could be very useful, even in general</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>3. it's broader</li> </ol>
Too academic	1	<p><b>No:</b></p> <ol style="list-style-type: none"> <li>1. not all of it could be used, it's too academic, the client group is industry, what interests them is how to complete the PDD, DNA criteria and EB guidance relevant</li> </ol>
Partly	4	<ol style="list-style-type: none"> <li>1. maybe not totally, but some section</li> <li>2. partially as specified before for the DNA</li> <li>3. maybe some elements</li> <li>4. for special cases, projects which are more difficult, e.g. for energy efficiency projects just as an example, in general applicable, when we don't know about the contribution to sustainable development and on the other side to prevent negative impacts</li> </ol>
Already applied (compare with other responses)	5	<ol style="list-style-type: none"> <li>1. already those elements applied in Austria, which can be applied</li> <li>2. indirectly maybe already used</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>3. because I think that something very similar is already used in this country</li> <li>4. partly already applied</li> <li>5. already applied</li> </ol>
Not in this country	1	<ol style="list-style-type: none"> <li>1. 1st step: country approach, different approach in this country (Ministry meeting)</li> </ol>

Effort	5	<ol style="list-style-type: none"> <li>1. the devil is in the detail, could mean much more work</li> <li>2. if it is simple to apply and not too much resources are needed</li> <li>3. time needed very important: not slow down process</li> <li>4. The question is how far it can be applied, how sophisticated and complex it should be, how many details, how many goals you want to check, will depend on resources and, even more on what will be useful for the future</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>5. could be, time assigned to define all this?</li> </ol>
Differentiation	1	<p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>1. different types of projects? If there are implications, identify</li> </ol>
Annex I	8	<ol style="list-style-type: none"> <li>1. absolutely, for the SD check, don't agree to leave this completely to the developing countries, risk of a race-to-the-bottom</li> </ol> <p><b>No:</b></p> <ol style="list-style-type: none"> <li>2. Annex I, only public financing to be considered and to check whether damaging to international diplomacy and military activities</li> <li>3. because of the role of the Annex I DNA</li> <li>4. depending on the host country, not for Annex I countries</li> <li>5. Not in this country (Annex I), very advanced already in this country</li> <li>6. because Annex I</li> <li>7. no, Annex I DNA</li> </ol> <p><b>Don't know:</b></p> <ol style="list-style-type: none"> <li>8. Not the task of this Annex I DNA to judge: but the SMA looks good</li> </ol>
Transparency	1	<ol style="list-style-type: none"> <li>1. transparency, very useful</li> </ol>
Addition	2	<ol style="list-style-type: none"> <li>1. thinking about it, developing another measure which defines responsibility, corruption is big problem</li> <li>2. improve approach: in French, otherwise will not be read in this country</li> </ol>
Other comments	22	<ol style="list-style-type: none"> <li>1. if I had the opportunity and time</li> <li>2. certainly</li> <li>3. could be used, could be included in the current proceedings</li> <li>4. could try to use it</li> <li>5. if clear and helpful, proposal for engineers / environmental scientists, how do CDM and SD relate in this country, quantification of SD criteria through CDM in this country</li> <li>6. it helps you</li> <li>7. from what the interviewee read, yes, implement under indicators, criteria</li> <li>8. in future, not a lot established,</li> <li>9. so far a long way, different conditions and different concepts</li> <li>10. of course, when we'll have more projects and more experience, when it's getting more important</li> <li>11. The sustainability management approach is not only to be recommended but also to be used. Any unsustainable management leads to a non-viable exploitation and to the ruin of the foundations on which the society is build</li> <li>12. consider it</li> <li>13. of course</li> <li>14. supports key concern of African countries which is SD</li> <li>15. came as a blessing</li> <li>16. without thinking so much</li> <li>17. can be useful, looks a bit complicate for beginners, but can be useful</li> <li>18. maybe will take into consideration with other experts, see what is more convincing</li> <li>19. Have to do so, critical thinking needed</li> <li>20. not yet done for the CDM</li> <li>21. happy to use it with your permission</li> </ol>

		<p><b>Don't know:</b> 22. maybe yes, cannot respond right now, will ask for feedback from all team members and from stakeholders and will send me responses until end of April</p>
Further comments		
Nothing new	1	<p><b>Those who did not recommend/want to use the SMA:</b> 1. There is a lot of info (manuals, etc.) how to do CDM project activities, 5 yrs looking at the CDM &amp; industry of this Annex I country: industry wants a pragmatic approach, clarity, industry language, requirements for the PDD, CDM cycle, This approach is not unique to CDM, fundamental to any project, what is the company's need? teach basic management?</p>
Applicability	2	<p>1. flexible, applicable 2. I like this approach, difference, combine real experience with analytical research: systematic/analytic plus qualitative/experimental,</p>
Voluntary ?	6	<p>1. The question is whether it can be compulsory or rather on a voluntary basis, people generally more concerned about environmental profile 2. not to be prescribed by the DNA 3. implementation might be different, especially e.g. small countries 4. host countries see prescriptions as kind of "neo-colonialism", SD currently very vague, nothing obligatory, but perhaps next commitment period new agreement 5. "That is something one can prescribe", consensus <b>Those who did not recommend/want to use the SMA:</b> 6. to be applied country by country, not globally,</p>
Simplify	2	<p>1. some concepts could be a bit complex for project developers and stakeholders, need certain level of knowledge, a more simplified form would be helpful, SMART seems to be a bit complex, and the discussion of assumptions, very interesting but difficult to implement 2. Germany much more developed than our country, some of the discussion doesn't apply: many rich industrialists in our country, but they are not well educated, teach them CDM is difficult, therefore keep approach simple</p>
Effort	6	<p>1. would have to be tested in practice whether the effort is bearable 2. question: for underlying assumptions, time needed, 2 groups, etc.? <b>Those who did not recommend/want to use the SMA:</b> 3. group needed to work on this and with this, tool for analysis 4. CDM is a market-based mechanism, the more complicated it's getting, the more industry will invest in other countries (race-to-the-bottom), 5. hardly theoretical, analytical tool, question if it is too deep, time needed to apply? 6. on the other side, the effort for host countries might be too high, difficult to say, maybe dependent on the person who uses it</p>
In practice / examples	9	<p>1. would like to see it in practice, this would make it very clear 2. many intervening people, proceed, put into practice 3. would have to be tested in practice whether this can be operationalised, whether the effort is bearable 4. more explanation would be needed 5. assumptions: new, needs to be studied further, not yet so clear to me, needs more clarification 6. More experience on how to apply it would be needed. <b>Those who did not recommend/want to use the SMA:</b> 7. for now that's OK, on paper, see it applied in field to assess it</p>

		<p>8. to accept it examples needed</p> <p>9. Difficult to judge after 3 pages, more examples needed</p>
Comprehensive	13	<p>1. very comprehensive</p> <p>2. at inception stage, no gaps or shortcomings identified, extremely useful</p> <p>3. has many elements (this is good), helps a lot, political aspect not always taken into account</p> <p>4. no gaps</p> <p>5. quite complete, all complete</p> <p>6. Very good approach: not only for the CDM (setting a baseline for the social part), but also for general SD projects, broader applicability</p> <p>7. No problems with this approach, it is complete, no gaps</p> <p>8. Not to improve, covered most issues</p> <p>9. OK, covered all aspects and roles of players</p> <p>10. The three informative pages are just a short summary, but it seems that all points are covered.</p> <p><b>Those who did not recommend/want to use the SMA:</b></p> <p>11. working from the background of management, way of looking at, no flaws, good approach</p> <p>12. useful, everything covered, have to take into consideration many things, gives many ideas</p> <p>13. Quite complete</p>
One option	2	<p>1. one of the good practices, to be successful project developers should follow one of the good practices, and this approach is definitely recommendable</p> <p><b>Those who did not recommend/want to use the SMA:</b></p> <p>2. 100% not sure, but "one approach in the folder", definitely interesting</p>
Current practice	9	<p>1. municipality, define since the beginning, difficult to approach, getting used to</p> <p>2. is satisfactory for this country, no particular approach implemented for considering SD and for guiding CDM project activities</p> <p>3. many countries do not have a list of indicators, helps to extent knowledge</p> <p>4. developing countries have not so many laws as in developed countries</p> <p>5. our approach assures SD already, but might require this approach, too</p> <p>6. This is one reason why this host DNA relies among the SD criteria on the following aspects: contribution to reduction of desertification and climate change, use of natural resources, creation of employment, and combat against poverty</p> <p>7. DNA just established, documentation for SD e.g MDGs, pick approaches left and right, a lot is going on in CDM, difficult to take all into account, related to trading, profit or not (for credits), no (market) profit achieved simply though SD, so no sense, how does SD come in?</p> <p><b>Those who did not recommend/want to use the SMA:</b></p> <p>8. this approach is more advanced than the current practice in the country</p> <p>9. not for application by DNA because policy not in so a structured way, each day new projects</p>
Post-approval	1	<p>1. big attention to be paid at the post-approval phase: monitoring &amp; verification, what if outcome in 5yrs, 10yrs, not what has been predicted, what recommendation? so far no legal tools to control the project</p>
Annex I	4	<p>1. Annex I DNA not to define objectives top-down, only objective: ERs</p> <p>2. DNAs of investor countries have a limited influence compared to DNAs of host countries (investor DNAs consider SD, but rather in a way such as "should big hydropower</p>

		plants be accepted or not" <b>Those who did not recommend/want to use the SMA:</b> 3. Responsibility of host countries 4. would help Annex I to follow the information in the PDD, especially useful for Non-Annex I DNAs
Social plans	2	1. Obligatory social investments: this is 'blackmailing' 2. contribution to SD, not necessarily need to be related to project activity, totally different group of people might benefit, e.g. fond or tax such as in China
Guide / Structure	5	1. our conception / understanding, difficulties, what are our needs? Facilitate how to promote, help developers 2. well articulated, well timed, gives systematic approach to define SD in CDM 3. brief time: a bit interested, makes you get more focused, if known before, SD criteria of the country would maybe have looked better 4. Would try it. It is very interesting, because it provides a clear idea 5. a guide to prepare unified material for all countries, different countries, different content, experience needed, for some countries maybe not so important than for this country, would maybe leave some elements out
Adapt	2	1. adapt it to former Soviet Union countries, in Eastern countries internal revision mentality still lacking <b>Those who did not recommend/want to use the SMA:</b> 2. to be adapted to the country context,
Link to logframe	1	1. better show links to logframe, which element corresponds to what in the logframe matrix (expected results, etc.), make this more explicit
Quantification	4	1. if something cannot be quantified, then they should become an objective, set realistic objectives, such as in the logframe, in any case it should be tried to estimate (e.g. how many persons get higher standard of living) 2. ranking system maybe a bit too much, scale of A-E, to quantify 3. quantitative part helps the people to influence the projects, not so much the financial aspect but the projects, the measures, e.g. social plan, other indicators for small and regular CDM project activities? Seems good <b>Those who did not recommend/want to use the SMA:</b> 4. marginal logic is difficult, utility: quantitative would be desirable for the host countries, if iterative process to reflect preferences, no problems
Additions	3	1. good, methodologies for specific projects, different project types, different tools? Specific criteria? What are the links? 2. Assumptions: use another wording for the rating: "high-potential" and "low-potential", and further differentiation possible along ec, soc, env, cultural impact; local and global impact 3. would be good to have different approaches for different project types, e.g. forestry (talk to somebody about this), SSc (e.g. group discussion tricky), for programmatic CDM some guidelines?
Implementation	1	1. important that the interpretation of reality is not shaped to match the process, but that the process helps to identify what actually is reality
Handbook	1	<b>Those who did not recommend/want to use the SMA:</b> 1. some good elements in the approach, develop handbook, keep in mind what industry wants to know about the CDM, link it to how to complete the PDD, how this relates to the EB
Content	1	1. for (L)DCs, the model should reflect the context of most developing countries, i.e. poverty reduction, income,

		livelihoods approach in the center of interest
Single elements	11	<ol style="list-style-type: none"> <li>1. for our case many useful ideas, especially the goals and the indicators</li> <li>2. page 1: SMA, representation of stakeholders, what is possible to do, ambitious, difficult to involve all inhabitants, economize</li> <li>3. discussion of underlying assumptions sounds a bit ambitious, a goal hierarchy and indicators should be defined by the DNA</li> <li>4. diagram SD: criteria (economic, social, environmental) should always be there, show cross-cutting issues, SD and ERs not at the same level</li> <li>5. I liked your approach, especially elements 1, 2, 4</li> <li>6. assumptions: new, needs to be studied further, not yet so clear to me, needs more clarification</li> <li>7. Perhaps the last element, the discussion of assumptions, may be very new for participants, but it is definitely useful.</li> <li>8. and the stakeholder analysis is good.</li> </ol> <p><b>Those who did not recommend/want to use the SMA:</b></p> <ol style="list-style-type: none"> <li>9. last element important, to check if results wouldn't change</li> <li>10. Good: policy analysis and stakeholder analysis, should be expanded, other elements less relevant, discussion of assumptions is fundamental</li> <li>11. stakeholder analysis, when in contact with parties, comply with the process, project developers will not go further than the indicators for analysis, the other elements: logframe, OK</li> </ol>
Other comments	30	<ol style="list-style-type: none"> <li>1. Will go through the paper again and will provide further feedback if have other ideas</li> <li>2. I like how it is</li> <li>3. vision: analyst/ modeler, define boundaries (design: not pick an extraordinary case which doesn't correspond to reality), looking for proposal for engineers / environmental scientists: how do CDM and SD relate in this country, quantification of SD criteria through CDM in this country</li> <li>4. page 2: jobs created, local school, social plan (question of understanding), chart: half done, most crucial, boxes most important (question of understanding)</li> <li>5. I wish you success, looking forward to results</li> <li>6. concerning the survey: picking answers and issues, different continent: innovative, that's what you did, all media used, attachment looked at it, good like this for this purpose, persistent impacts (SD)</li> <li>7. Very good idea, and the idea of the interview, apart from ERs also intention to measure if it really contributes to SD of a country</li> <li>8. 1st step, establish criteria, develop framework, procedures to be established, project developer to know before approval</li> <li>9. in general, it's good, proposal to be considered by the DNA</li> <li>10. very interesting, right away no negative things noticed</li> <li>11. Looking forward to receiving the thesis soon</li> <li>12. nicely done, confident, very interesting results, impacts of climate change are not yet fully understood</li> <li>13. great merit, will open new approaches to the CDM</li> <li>14. didn't analyze the approach very much, because in English, but understood it from a formal point of view, cannot criticize it</li> <li>15. I wish you luck</li> <li>16. not able to recommend changes, go through approach in detail again</li> <li>17. no experience for judging, first time with scientific side</li> <li>18. I will maybe send further comments later, I think it's OK</li> </ol> <p><b>Those who did not recommend/want to use the SMA:</b></p> <ol style="list-style-type: none"> <li>19. good work, I think that it will contribute much to the people</li> <li>20. the SMA contains a lot of knowledge, more than I know about</li> </ol>

	<p>this issue, sounds logical, some problems of understanding, but no special part identified, in general understandable</p> <p>21. the financial side is crucial to achieve the goals</p> <p>22. hard to understand approach, measure each criterion, 1st policy, sequence, way of thinking, after explanation: makes more sense, final feedback: would help DNA-approach</p> <p>23. seems OK, most elements involved, for analysis of SD could be useful, this is my initial reaction</p> <p>24. personal opinion: good approach, consider it very positive as a person, not personally been involved with CDM evaluation, therefore difficult to judge/decide whether applicable</p> <p>25. good like this, it's flexible, nothing negative</p> <p>26. can stay like that</p> <p>27. I'm very interested in results</p> <p>28. fine, but not much experience so far, but generally yes</p> <p>29. will do it anyway like that, didn't spot anything negative</p> <p>30. no opinion, but understanding of the approach is good, SD and CDM: investment approach, SD hard to interpret</p>
--	---

## 9. Statistical tests of the DNA-survey

Hypothesis 1: There is a contingency between the regional group a DNA belongs to and whether the interviewee would recommend the SMA.

Zero-hypothesis 1: There is no contingency between the regional group a DNA belongs to and whether the interviewee would recommend the SMA.

Contingency	Tests				Result
AFR – recommend	Rec.	AFR	Not AFR	Sum	No contingency
	yes	17	46	6	
	not yes	3	14	17	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.54 (both sides), 0.328 (one side)				
ASP – recommend	Rec.	ASP	Not ASP	Sum	No contingency
	yes	17	46	63	
	not yes	4	13	17	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.521 (one side)				
LAC – recommend	Rec.	LAC	Not LAC	Sum	No contingency
	yes	16	47	63	
	not yes	4	13	17	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.574 (one side)				
EE – recommend	Rec.	EE	Not EE	Sum	No contingency
	yes	3	60	63	
	not yes	1	16	17	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.623 (one side)				

WE and others – recommend	Rec.	WE+ <sup>6</sup>	Not WE+	Sum	No contingency
	yes	9	54	63	
	not yes	4	13	17	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.458 (both sides), 0.281 (one side)				
none – recommend	Rec.	none	Not none	Sum	No contingency
	yes	1	62	63	
	not yes	1	16	17	
	Sum	2	78	80	
	Exact Fisher test: Exact significance: 0.382 (both sides), 0.382 (one side)				

**Table 52:** Results for testing hypothesis 1

The zero-hypothesis is not discarded.

Hypothesis 2: There is a contingency between the regional group a DNA belongs to and whether the interviewee would use the SMA.

Zero-hypothesis 2: There is no contingency between the regional group a DNA belongs to and whether the interviewee would use the SMA.

Contingency	Tests				Result
AFR – use	Use	AFR	Not AFR	Sum	No contingency
	yes	16	38	54	
	not yes	4	22	26	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.270 (both sides), 0.134 (one side)				
ASP – use	Use	ASP	Not ASP	Sum	No contingency
	yes	17	37	54	
	not yes	4	22	26	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 0.177 (both sides), 0.102 (one side)				
LAC – use	Use	LAC	Not LAC	Sum	No contingency
	yes	14	40	54	
	not yes	6	20	26	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.507 (one side)				
EE – use	Use	EE	Not EE	Sum	No contingency
	yes	2	52	54	
	not yes	2	24	26	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 0.592 (both sides), 0.392 (one side)				

<sup>6</sup> “WE+” in the tables is used as an abbreviation for “WE and others”.

WE and others – use	Use	WE+	Not WE+	Sum	Significant contingency
	yes	4	50	54	
	not yes	9	17	26	
	Sum	13	67	80	
Exact Fisher test: Exact significance: 0.004 (both sides), 0.004 (one side) Lambda: symmetric 0.128, dependent ‘use’: 0.192, dependent ‘WE and others’: 0.000					
none – use	Use	ASP	Not ASP	Sum	No contingency
	yes	1	53	54	
	not yes	1	25	26	
	Sum	2	78	80	
Exact Fisher test: Exact significance: 0.547 (both sides), 0.547 (one side)					

**Table 53:** Results for testing hypothesis 2

The zero-hypothesis is discarded for the group of Western countries and others. The exact Fisher test shows that the two sided zero-hypothesis (no contingency between the variables, being positive or negative) comes to the same result as the single sided test (positive influence of the country group on the readiness to use the SMA). The probabilities of error, i.e. the significance levels, are identical. The Lambda suggests that the independent variable is the fact of belonging to the group of Western countries and others, and the dependent variable is the fact whether the interviewee would use the SMA. (Brosius, 2006)

This confirms the logic consideration that Annex I countries are less likely to use the SMA themselves, as they are not so much involved in the assessment of the contribution to sustainable development.

Hypothesis 3: There is a contingency between the CDM experience of a DNA and whether the interviewee would recommend the SMA.

Zero-hypothesis 3: There is no contingency between the CDM experience of a DNA and whether the interviewee would recommend the SMA.

Contingency	Tests				Result
Experience recommend –	Rec.	Experien ce	No experien ce	Sum	No contingency
	yes	45	18	63	
	not yes	14	3	17	
	Sum	59	21	80	
Exact Fisher test: Exact significance: 0.537 (both sides), 0.282 (one side)					

**Table 54:** Results for testing hypothesis 3

The zero-hypothesis is not discarded.

Hypothesis 4: There is a contingency between the CDM experience of a DNA and whether the interviewee would use the SMA.

Zero-hypothesis 4: There is no contingency between the CDM experience of a DNA and whether the interviewee would use the SMA.

Contingency	Tests				Result
Experience – use	Use	Experience	No experience	Sum	No contingency
	yes	36	18	54	
	not yes	23	3	26	
	Sum	59	21	80	
Exact Fisher test: Exact significance: 0.56 (both sides), 0.32 (one side)					

**Table 55:** Results for testing hypothesis 4

The zero-hypothesis is not discarded.

Hypothesis 5: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 1 useful.

Zero-hypothesis 5: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 1 useful.

Contingency	Tests				Result
AFR – Element 1 useful	Element 1	AFR	Not AFR	Sum	No contingency
	yes	19	59	78	
	not yes	1	1	2	
	Sum	20	60	80	
Exact Fisher test: Exact significance: 0.44 (both sides), 0.44 (one side)					
ASP – Element 1 useful	Element 1	ASP	Not ASP	Sum	No contingency
	yes	21	57	78	
	not yes	0	2	2	
	Sum	21	59	80	
Exact Fisher test: Exact significance: 1 (both sides), 0.541(one side)					
LAC – Element 1 useful	Element 1	LAC	Not LAC	Sum	No contingency
	yes	20	58	78	
	not yes	0	2	2	
	Sum	20	60	80	
Exact Fisher test: Exact significance: 1 (both sides), 0.56 (one side)					
EE – Element 1 useful	Element 1	EE	Not EE	Sum	No contingency
	yes	4	74	78	
	not yes	0	2	2	
	Sum	4	76	80	
Exact Fisher test: Exact significance: 1 (both sides), 0.902 (one side)					
WE and others – Element 1 useful	Element 1	WE+	Not WE+	Sum	No contingency
	yes	12	66	78	
	not yes	1	1	2	
	Sum	13	67	80	
Exact Fisher test: Exact significance: 0.3 (both sides), 0.3 (one side)					

none – Element 1 useful	side)				No contingency
	Element 1	none	Not none	Sum	
	yes	2	76	78	
	not yes	0	2	2	
	Sum	2	78	80	
Exact Fisher test: Exact significance: 1 (both sides), 0.95 (one side)					

**Table 56:** Results for testing hypothesis 5

The zero-hypothesis is not discarded.

Hypothesis 6: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 2 useful.

Zero-hypothesis 6: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 2 useful.

Contingency	Tests				Result
AFR – Element 2 useful	Element 2	AFR	Not AFR	Sum	No contingency
	yes	20	59	79	
	not yes	0	1	1	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.75 (one side)				
ASP – Element 2 useful	Element 2	ASP	Not ASP	Sum	No contingency
	yes	21	58	79	
	not yes	0	1	1	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.737(one side)				
LAC – Element 2 useful	Element 2	LAC	Not LAC	Sum	No contingency
	yes	20	59	79	
	not yes	0	1	1	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.75 (one side)				
EE – Element 2 useful	Element 2	EE	Not EE	Sum	No contingency
	yes	4	75	79	
	not yes	0	1	1	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 0.162 (both sides), 0.162 (one side)				
WE and others – Element 2 useful	Element 2	WE+	Not WE+	Sum	No contingency
	yes	12	67	79	
	not yes	1	0	1	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.162 (both sides), 0.162 (one side)				
none – Element 2 useful	Element 2	none	Not none	Sum	No contingency
	yes	2	77	79	
	not yes	0	1	1	

	Sum	2	78	80	
Exact Fisher test: Exact significance: 1 (both sides), 0.975 (one side)					

**Table 57:** Results for testing hypothesis 6

The zero-hypothesis is not discarded.

Hypothesis 7: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 3 useful.

Zero-hypothesis 7: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 3 useful.

Contingency	Tests				Result
AFR – Element 3 useful	Element 3	AFR	Not AFR	Sum	No contingency
	yes	20	57	77	
	not yes	0	3	3	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.569 (both sides), 0.417 (one side)				
ASP – Element 3 useful	Element 3	ASP	Not ASP	Sum	No contingency
	yes	20	57	77	
	not yes	1	2	3	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.604 (one side)				
LAC – Element 3 useful	Element 3	LAC	Not LAC	Sum	No contingency
	yes	20	57	77	
	not yes	0	3	3	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.569 (both sides), 0.417 (one side)				
EE – Element 3 useful	Element 3	EE	Not EE	Sum	No contingency
	yes	3	74	77	
	not yes	1	2	3	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 0.144 (both sides), 0.144 (one side)				
WE and others – Element 3 useful	Element 3	WE+	Not WE+	Sum	No contingency
	yes	12	65	77	
	not yes	1	2	3	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.417 (both sides), 0.417 (one side)				
none – Element 3 useful	Element 3	AFR	Not AFR	Sum	No contingency
	yes	2	75	77	
	not yes	0	3	3	
	Sum	2	78	80	

	Exact Fisher test: Exact significance: 1 (both sides), 0.926 (one side)	
--	--	--

**Table 58:** Results for testing hypothesis 7

The zero-hypothesis is not discarded.

Hypothesis 8: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 4 useful.

Zero-hypothesis 8: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 4 useful.

Contingency	Tests				Result
AFR – Element 4 useful	Element 4	AFR	Not AFR	Sum	No contingency
	yes	20	54	74	
	not yes	0	6	6	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.328 (both sides), 0.167 (one side)				
ASP – Element 4 useful	Element 4	ASP	Not ASP	Sum	No contingency
	yes	19	55	74	
	not yes	2	4	6	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 0.65 (both sides), 0.5 (one side)				
LAC – Element 4 useful	Element 4	LAC	Not LAC	Sum	No contingency
	yes	19	55	74	
	not yes	1	5	6	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.53 (one side)				
EE – Element 4 useful	Element 4	EE	Not EE	Sum	No contingency
	yes	4	70	74	
	not yes	0	6	6	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.728 (one side)				
WE and others – Element 4 useful	Element 4	WE+	Not WE+	Sum	No contingency
	yes	10	64	74	
	not yes	3	3	6	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.051 (both sides), 0.051 (one side)				
none – Element 4 useful	Element 4	none	Not none	Sum	No contingency
	yes	2	72	74	
	not yes	0	6	6	
	Sum	2	78	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.855 (one side)				

**Table 59:** Results for testing hypothesis 8

The zero-hypothesis is not discarded.

Hypothesis 9: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 5 useful.

Zero-hypothesis 9: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 5 useful.

Contingency	Tests				Result
AFR – Element 5 useful	Element 5	AFR	Not AFR	Sum	No contingency
	yes	20	56	76	
	not yes	0	4	4	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.567 (both sides), 0.308 (one side)				
ASP – Element 5 useful	Element 5	ASP	Not ASP	Sum	No contingency
	yes	21	55	76	
	not yes	0	4	4	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 0.568 (both sides), 0.288 (one side)				
LAC – Element 5 useful	Element 5	LAC	Not LAC	Sum	No contingency
	yes	18	58	76	
	not yes	2	2	4	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.259 (both sides), 0.259 (one side)				
EE – Element 5 useful	Element 5	EE	Not EE	Sum	No contingency
	yes	4	72	76	
	not yes	0	4	4	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.811 (one side)				
WE and others – Element 5 useful	Element 5	WE+	Not WE+	Sum	No contingency
	yes	11	65	76	
	not yes	2	2	4	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.122 (both sides), 0.122 (one side)				
none – Element 5 useful	Element 5	none	Not none	Sum	No contingency
	yes	2	74	76	
	not yes	0	4	4	
	Sum	2	78	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.902 (one side)				

**Table 60:** Results for testing hypothesis 9

The zero-hypothesis is not discarded.

Hypothesis 10: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 6 useful.

Zero-hypothesis 10: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 6 useful.

Contingency	Tests				Result
AFR – Element 6 useful	Element 6	AFR	Not AFR	Sum	No contingency
	yes	19	56	75	
	not yes	1	4	5	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.633 (one side)				
ASP – Element 6 useful	Element 6	ASP	Not ASP	Sum	No contingency
	yes	20	55	75	
	not yes	1	4	5	
	Sum	21	59	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.606 (one side)				
LAC – Element 6 useful	Element 6	LAC	Not LAC	Sum	No contingency
	yes	19	56	75	
	not yes	1	4	5	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.633 (one side)				
EE – Element 6 useful	Element 6	EE	Not EE	Sum	No contingency
	yes	4	71	75	
	not yes	0	5	5	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.769 (one side)				
WE and others – Element 6 useful	Element 6	WE+	Not WE+	Sum	No contingency
	yes	11	64	75	
	not yes	2	3	5	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.184 (both sides), 0.184 (one side)				
none – Element 6 useful	Element 6	none	Not none	Sum	No contingency
	yes	2	73	75	
	not yes	0	5	5	
	Sum	2	78	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.878 (one side)				

**Table 61:** Results for testing hypothesis 10

The zero-hypothesis is not discarded.

Hypothesis 11: There is a contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 7 useful.

Zero-hypothesis 11: There is no contingency between the regional group a DNA belongs to and the fact if the interviewee considers element 7 useful.

Contingency	Tests				Result
AFR – Element 7 useful	Element 7	AFR	Not AFR	Sum	No contingency
	yes	19	53	72	
	not yes	1	7	8	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.672 (both sides), 0.355 (one side)				
ASP – Element 7 useful	Element 7	ASP	Not ASP	Sum	No contingency
	yes	19	53	72	
	not yes	2	1	8	
	Sum	20	59	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.65 (one side)				
LAC – Element 7 useful	Element 7	LAC	Not LAC	Sum	No contingency
	yes	19	53	72	
	not yes	1	7	8	
	Sum	20	60	80	
	Exact Fisher test: Exact significance: 0.672 (both sides), 0.355 (one side)				
EE – Element 7 useful	Element 7	EE	Not EE	Sum	No contingency
	yes	4	68	72	
	not yes	0	8	8	
	Sum	4	76	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.65 (one side)				
WE and others – Element 7 useful	Element 7	WE+	Not WE+	Sum	No contingency
	yes	10	62	72	
	not yes	3	5	8	
	Sum	13	67	80	
	Exact Fisher test: Exact significance: 0.116 (both sides), 0.116 (one side)				
none – Element 7 useful	Element 7	none	Not none	Sum	No contingency
	yes	1	71	72	
	not yes	1	7	8	
	Sum	2	78	80	
	Exact Fisher test: Exact significance: 0.191 (both sides), 0.191 (one side)				

**Table 62:** Results for testing hypothesis 11

The zero-hypothesis is not discarded.

Hypothesis 12: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 1 useful.

Zero-hypothesis 12: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 1 useful.

Contingency	Tests				Result
Experience – Element 1 useful	Element 1	Experience	No experience	Sum	No contingency
	yes	57	21	78	
	not yes	2	0	2	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.541 (one side)				

**Table 63:** Results for testing hypothesis 12

The zero-hypothesis is not discarded.

Hypothesis 13: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 2 useful.

Zero-hypothesis 13: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 2 useful.

Contingency	Tests				Result
Experience – Element 2 useful	Element 2	Experience	No experience	Sum	No contingency
	yes	58	21	79	
	not yes	1	0	1	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.737 (one side)				

**Table 64:** Results for testing hypothesis 13

The zero-hypothesis is not discarded.

Hypothesis 14: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 3 useful.

Zero-hypothesis 14: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 3 useful.

Contingency	Tests				Result
Experience – Element 3 useful	Element 3	Experience	No experience	Sum	No contingency
	yes	57	20	77	
	not yes	2	1	3	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.604 (one side)				

**Table 65:** Results for testing hypothesis 14

The zero-hypothesis is not discarded.

Hypothesis 15: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 4 useful.

Zero-hypothesis 15: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 4 useful.

Contingency	Tests				Result
Experience – Element 4 useful	Element 4	Experience	No experience	Sum	No contingency
	yes	55	19	74	
	not yes	4	2	6	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 0.65 (both sides), 0.5 (one side)				

**Table 66:** Results for testing hypothesis 15

The zero-hypothesis is not discarded.

Hypothesis 16: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 5 useful.

Zero-hypothesis 16: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 5 useful.

Contingency	Tests				Result
Experience – Element 5 useful	Element 5	Experience	No experience	Sum	No contingency
	yes	55	21	76	
	not yes	4	0	4	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 0.568 (both sides), 0.288 (one side)				

**Table 67:** Results for testing hypothesis 16

The zero-hypothesis is not discarded.

Hypothesis 17: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 6 useful.

Zero-hypothesis 17: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 6 useful.

Contingency	Tests				Result
Experience – Element 6 useful	Element 6	Experience	No experience	Sum	No contingency
	yes	55	20	75	
	not yes	4	1	5	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 1 (both sides), 0.606 (one side)				

**Table 68:** Results for testing hypothesis 17

The zero-hypothesis is not discarded.

Hypothesis 18: There is a contingency between the experience of a DNA and the fact if the interviewee considers element 7 useful.

Zero-hypothesis 18: There is no contingency between the experience of a DNA and the fact if the interviewee considers element 7 useful.

Contingency	Tests				Result
Experience – Element 7 useful	Element 7	Experience	No experience	Sum	No contingency
	yes	51	21	72	
	not yes	8	0	8	
	Sum	59	21	80	
	Exact Fisher test: Exact significance: 0.13 (both sides), 0.076 (one side)				

**Table 69:** Results for testing hypothesis 18

The zero-hypothesis is not discarded.

## References

- Arnold, W., et al. (2001). Grundlängen und Bausteine einer Sustainable Balanced Scorecard (SBS) – Überlegungen zur Entwicklung einer SBS für mittelständische Unternehmen. Werkstattreihe Betriebliche Umweltpolitik – Band 17. Universität Kassel.
- Austin, D., et al. (1999). How much sustainable development can we expect from the Clean Development Mechanism? Climate Notes. Washington, DC. World Resources Institute.
- Begg, K., et al. (2003). Assessment of sustainability benefits from small-scale community projects. Encouraging CDM energy project to aid poverty alleviation – Attachment 3.
- Brosius, F. (2006). SPSS 14 – Das mitp-Standardwerk. Heidelberg, mitp, REDLINE GMBH.
- CONAM (2005). Perfil temático: Cambio Climático. Proyecto de autoevaluación de capacidades nacionales (NCSA). Lima. Consejo Nacional del Ambiente.
- Huq, S. (2002). Applying sustainable development criteria to CDM projects: PCF experience. PCFplus Report 10. Washington, DC.
- Olhoff, A., et al. (2004). CDM sustainable development impacts - Developed for the UNEP project 'CD4CDM'. Roskilde, Denmark. UNEP-Risoe Center.
- Simon, S. (2004). Systemic Evaluation Methodology: the emergence of social learning from environmental ICT prototypes. *Systemic Practice And Action Research*. **17**(5), 471-496.
- Sutter, C. (2003). Sustainability Check-Up for CDM Projects. How to assess the sustainability of international projects under the Kyoto Protocol. Wissenschaftlicher Verlag Berlin.