

**SUSTAINABLE PROJECT LIFE CYCLE
MANAGEMENT: DEVELOPMENT OF SOCIAL
CRITERIA FOR DECISION-MAKING**

by

Carin Labuschagne

Submitted in partial fulfilment of the requirements for
the degree of

PHILOSOPHIAE DOCTOR

in the

DEPARTMENT OF ENGINEERING & TECHNOLOGY MANAGEMENT

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

UNIVERSITY OF PRETORIA

PRETORIA

MAY 2005

Research Summary

Sustainable project life cycle management: Development of social criteria for decision-making

Carin Labuschagne

Promoter: Dr. A.C. Brent
Department: Department of Engineering and Technology Management
University: University of Pretoria
Degree: Philosophiae Doctor (Engineering Management)

Various driving forces originating from society, government, employees and business partners are forcing companies to both incorporate sustainable development in their business practices as well as to align all internal operations and practices with the principles thereof. Project management as a core business competency is not excluded from these requirements. An initial analysis of sustainable project life cycle management methodologies' current status highlighted that social and environmental aspects of sustainable development are not addressed effectively. An acceptable model aimed at addressing the various sustainable development aspects from a project management perspective is thus needed. This study's main research objective was consequently to develop the different elements of such a model for social business sustainability. The research focused on the three main research questions discussed below.

Which lifecycles should be considered when evaluating the project's possible impacts?

Projects implement or deliver certain products, which in turn, can produce other commodities sold by the company. In the process industry, a project's product is normally an asset that produces products. The three lifecycles, i.e. project, asset and product, were studied to determine which lifecycles to consider when evaluating projects' possible impacts. It was concluded that it is specifically the project's deliverables and its associated products that have economic, social and environmental consequences. These life cycles must therefore be considered as part of the project life cycle when evaluating social impacts.

What social business sustainability impacts or aspects should be considered in the project life cycle?

A sustainable development framework that can be applied to projects directly to ensure their alignment with sustainable development does not exist at present. A social sustainability assessment framework as part of a sustainability assessment framework for operational initiatives was consequently developed and introduced. The social framework was verified and validated by means of case studies, a survey and a Delphi Technique case study to test the framework's completeness and relevance.

How should project management methodologies be adopted to ensure incorporation of social business sustainability?

The research indicated that the various social aspects are addressed in different ways in the individual asset life cycle phase. The social criteria in the framework should therefore also be addressed in different ways in the project management methodologies, namely by means of:

- Social Impact Assessments (SIAs) and Social Risk Assessment (SRAs): checklists, questionnaires and evaluation methods;
- project evaluation methods, i.e. Project Definition Rating Index, gate reviews and gate decision-making; and
- Corporate Governance frameworks that have not been developed to date.

A Social Impact Indicator (SII) calculation procedure, based on a previously introduced Life Cycle Impact Assessment (LCIA) calculation procedure for environmental Resource Impact Indicators (RIIs), was developed as a method to evaluate social impacts in the project life cycle phases. The evaluation method relies on the availability of regional or national social information as well as project or technology-specific social information available during the project life cycle's various phases. Case studies in the process industry and statistical information for South Africa have been used to establish information availability for the SII calculation procedure.

It was concluded that a quantitative social impact assessment method can currently not be applied for project management purposes, given the lack of social project and social footprint information. Instead, social impact and social risk assessment checklist and questionnaires have been developed. Similar to the environmental dimension, it is envisaged that the use of such checklists and guidelines would in time improve the availability of quantitative data and would therefore make the SII procedure more practical in the future.

Future Research:

The following three possibilities for future research have been identified:

- research into corporate governance frameworks for project management;

- further testing of the indicator evaluation methods and finalisation of mid-point categories. This research can only be undertaken once social information and data are more readily available internally and externally; and
- development of a visual appearance for the framework, which indicates relationships between the three dimensions, spatial scales of impacts and relative importance of criteria to business.

Keywords:

Social sustainability, project life cycle management, project management methodologies, sustainable development framework, social assessment, life cycle impact assessment, Resource Impact Indicator (RII); Social Impact Indicator (SII); corporate responsibility, business sustainability.

DECLARATION

I declare that the thesis, which I hereby submit for the degree Philosophiae Doctor (Engineering Management) at the University of Pretoria, is my own work and has not been previously submitted by me for a degree at another University.

Carin Labuschagne

ACKNOWLEDGEMENTS

The author hereby acknowledges the extensive contributions of the following individuals, organisations and institutions and wishes to express sincere gratitude for their assistance:

- Dr. Alan Brent and Jurie Steyn, who acted as study leaders and mentors for the study.
- Prof. Andre Buys and Prof. Herman Steyn for guidance and inputs as members of the research committee.
- Dr. Chris van den Berg, Gerrie de Jong, Fred Goede and Dr. Gerrit Kornelius for their contributions and inputs as members of the steering committee which monitored the progress of the research.
- The following people for assisting with the individual case studies and/or for participating in the Delphi technique and/or focus groups: Dr. Chris van den Berg, Jurie Steyn, Fritz Weilbach, Rudie van Zyl, Renee Roolvink, Louis van Wyk, Annerine Wenhold, Christine Basson, Dr Rüdiger Pohl, Gerrie de Jong, Beno van Waveren, Hazel du Toit, Charles Steyn, Eulalia Temba, Paul Warner, Nancy Tower, Carl Scholtz, Antoinette Coetzer, Adithi Rooplall, Retha Killian, Christi Brand, Christo Fourie, Mike Tisdall, Steven Warren, Armand Fourie, Johan van Zyl, Bertie Botha, Dr. Jaap Smit, Tanya Basel, Kate Farina, Susan Sellschop, Sidney Sanders, Coert Welman, Hylton Robinson, Sean Scholtz, Andrew Duthie, Marja Prinsloo, Marinda Thornhill, Nthabiseng Ralethohlane and Noreen Pretorius.
- Statistics South Africa and specifically Nigel Bragg, Piet Alberts, Bernard Rambuda, Kevin Parry, Sagaren Pillay and Veli Mahlangu for providing statistical information.
- eThekweni Municipality Metropolitan Council and particularly Dr. Roberts and Louisa Marnewick for providing access to social footprint information.
- Emalahleni Local Council and specifically Hardus van der Merwe for providing social footprint information.
- Academic Information Services of the University of Pretoria and particularly Hettie Groenewald, Hanneljie Boshoff and Rachel Mahlangu for assisting with the requirement of research articles and material.
- Louise Dreyer and Ron van Erck for meaningful discussions and debates on social sustainability.
- Werner Schoeman, Chanel de Jager and Johnnie Johnson for assistance with the webpage development.
- Johanna Matlakala for assistance with data capturing of completed surveys.
- Ilse Posselt for the language editing.

The author also wishes to express sincere appreciation to family members and friends for their continuous support.

Table of Content

1.	Introduction	1
1.1	Changing Expectations	1
1.1.1	Driving Forces for Incorporating Business Sustainability	3
1.2	The reaction of business to the sustainability challenge	13
1.3	Current Status of Sustainable Project Life Cycle Management (SPLCM)	15
1.3.1	Project Management	15
1.3.2	Sustainable Project Life Cycle Management	17
1.4	Research Problem and Approach	19
1.4.1	Research Problem	19
1.4.2	Research Questions and Objectives	20
1.4.3	Research Approach	21
1.5	Structure of the Thesis	23
1.6	Conclusion	23
2.	Life Cycles Involved in Projects	24
2.1	Introduction	24
2.2	Project Life Cycle	24
2.3	Asset Life Cycle	27
2.4	Product Life Cycle	30
2.5	Conclusion: Life Cycle Interaction	32
3.	Social Sustainability Framework	33
3.1	Introduction	33
3.2	Prerequisites for the Framework	34
3.2.1	Institutional Sustainability and Business Strategy	34
3.2.2	Corporate Social Investments and the Sustainability of Business Initiatives	36
3.3	Economic and Environmental Dimensions	37
3.3.1	Economic Business Sustainability	37
3.3.2	Environmental Business Sustainability	38
3.4	Social Business Sustainability	39
3.4.1	Criteria for Social Business Sustainability	40
3.4.2	Internal Human Resources	43
3.4.3	External Population	49
3.4.4	Macro Social Performance	56
3.4.5	Stakeholder Participation	58
3.5	Conclusion	63
4.	Verification of the Social Sustainability Assessment Framework	64
4.1	Framework Verification Part 1: Construction Phase	65
4.1.1	Oil Service Stations	66
4.1.2	Open Cast Mine next to the Vaal River	69

4.1.3	Natural Gas Project	74
4.1.4	Hazardous Waste Treatment Facility Project	84
4.1.5	Conclusion	87
4.2	Framework Verification Part 2: Operation Phase	89
4.2.1	Record of Complaints	90
4.2.2	Analysis of Sustainable Development Reports	102
4.2.3	Conclusion	105
4.3	Framework Verification Part 3: Decommissioning Phase	106
4.3.1	Cyanide Production Facility in Mpumalanga	106
4.3.2	Acrylic Fibre Plant	110
4.3.3	Open Cast Mine	114
4.3.4	Conclusion	118
4.4	Conclusion	119
5.	Validation of the Social Sustainability Assessment Framework	120
5.1	Relevance to Business	121
5.1.1	Survey Structure and Participant Profile	121
5.1.2	Survey Results	122
5.2	Relevance to the Asset Life Cycle	125
5.3	Relevance to Project Management	129
5.4	Conclusion	131
6.	Social Criteria in Project Management	133
6.1	Introduction	133
6.2	Social Impact and Social Risk Assessment	138
6.2.1	Evaluation Method for Predicted Social Impact	138
6.2.2	Checklists and Questionnaires	169
6.2.3	Conclusion	173
6.3	Project Evaluation Methods	173
6.3.1	Gate Readiness Reviews	174
6.3.2	Decision-Making Techniques for Business Sustainability	179
6.4	Conclusions	187
7.	Conclusions	188
7.1	How: Methods to Adopt Project Management Methodologies	188
7.2	What: Proposed Social Sustainability Framework	193
7.2.1	Sustainability Framework as a Target	194
7.2.2	Sustainability Wall	194
7.2.3	Russian Doll	195
7.2.4	Hierarchical Model	196
7.3	Which: Life Cycles to Consider	197
7.4	Why: Importance of Social Sustainability to Business	197

8.	References	199
----	------------	-----

Table of Figures

Figure 1-1: Drivers for the Incorporation of Business Sustainability [adapted from 34]	4
Figure 1-2: Initiatives to Introduce Business Sustainability Concepts in the Organisation	14
Figure 1-3: Incorporation of Sustainability within Different Levels in an Organisation	14
Figure 1-4: Staged Project Life Cycle Management Framework (adapted from [97, 98, 101])	16
Figure 1-5: Extent of Current Environmental and Social Considerations in a Project's Life Cycle	17
Figure 1-6: Conceptual Model	21
Figure 1-7: Research Approach	22
Figure 1-8: Structure of the Thesis	23
Figure 2-1: Generic Project Life Cycle	27
Figure 2-2: System Life Cycle Applied to Assets [130]	28
Figure 2-3: Plant or Process Life Cycle [103]	28
Figure 2-4: Generic Asset Life Cycle	29
Figure 2-5: Interaction Between the Project and Asset Life Cycles	30
Figure 2-6: Product Life Cycle [133]	30
Figure 2-7: Interaction Between the Asset (Process) and Product Life Cycle	31
Figure 2-8: Interaction Between the Project, Asset and Product Life Cycles	32
Figure 3-1: Level 1 to 3 of the Project Sustainability Assessment Framework	37
Figure 3-2: Level 1 to 4 of the Proposed Sustainability Assessment Framework	42
Figure 3-3: Matrix of Enlightenment for Engagement in Civil Society [2]	50
Figure 3-4: Stakeholder Classification System [2]	59
Figure 3-5: Corporate Stakeholders [156]	59
Figure 3-6: Proposed Social Sustainability Assessment Framework	63
Figure 4-1: Case Study Approach for Social Sustainability Framework Verification	64
Figure 4-2: Social Issues Relevant to the Construction of Individual Service Stations	67
Figure 4-3: Social Criteria Relevant to the Construction of the North West Mine	71
Figure 4-4: Route of Pipeline [235]	74
Figure 4-5: Document Structure of the Natural Gas Project [235]	76
Figure 4-6: Social Issues Relevant to Project	77
Figure 4-7: Social Criteria Relevant to the Hazardous Waste Treatment Facility Project	85
Figure 4-8: Social Aspects Relevant to Construction	88
Figure 4-9: Inter-company External Complaint Response Procedure	91
Figure 4-10: Analysis of Sources of Social Complaints	92
Figure 4-11: Analysis of Complaints about Sensory Stimuli	93
Figure 4-12: Analysis of External Complaint Investigations	93
Figure 4-13: Frequency of Respondents' Complaints	95
Figure 4-14: Response time of telephone complaints.	95
Figure 4-15: Major Complaints According to Respondents	96
Figure 4-16: Analysis of Sources of Social Complaints	98

Table of Figures

Figure 4-17: Complaint Process	99
Figure 4-18: Analysis of Complaints about Sensory Stimuli	101
Figure 4-19: Social Aspects relevant in Operational Phase	105
Figure 4-20: Social Issues Relevant to the Decommissioning of the Cyanide Plant	108
Figure 4-21: Social Aspects Relevant to the Decommissioning of the Acrylic Fibre Plant	112
Figure 4-22: Social Issues Relevant to the Decommissioning of the Open Cast Mine	115
Figure 4-23: Social Aspects Relevant to Decommissioning	118
Figure 5-1: Validation Structure of the Proposed Social Sustainability Framework	120
Figure 5-2: Related Expertise of the Participants of the Business Validation Survey	122
Figure 5-3: Results of the Survey regarding the Relevance of the Criteria	122
Figure 6-1: Chapter Layout	133
Figure 6-2: Midpoints and Endpoints in a Single Scoring Mechanism [Bare, et all in 271]	139
Figure 6-3: Midpoint Categories Mapped Against Areas of Protection	143
Figure 6-4: Summary of Proposed Activities and Deliverables Prompted by Questionnaires and Checklists for Phase 1 to 3	171
Figure 6-5: Summary of Proposed Activities and Deliverables Prompted by Questionnaires and Checklists for Phase 4 to 6	172
Figure 6-6: The Use of Proposed Methods over the Life Cycle	173
Figure 6-7: Proposed Gate Questions to Address Social Business Sustainability	175
Figure 6-8: Decision Criteria Hierarchy	181
Figure 6-9: The BSC [312, 313].	184
Figure 6-10: Balanced Scorecard for Projects [319]	186
Figure 7-1: Sustainability Target Framework	194
Figure 7-2: Sustainability Wall	195
Figure 7-3: Proposed “Russian Doll” Framework	196
Figure 7-4: Changes to Proposed Social Sustainability Assessment Framework	196

Table of Tables

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles	6
Table 1-2: Definitions for Business or Corporate Sustainability	13
Table 1-3: Results of Survey in the South African Process Industry	18
Table 1-4: Types of Group Interviews [114]	22
Table 2-1: Phases in the Project Life Cycle	25
Table 2-2: Life Cycle Phases in a Project [97]	26
Table 2-3: Comparison Between the Characteristics of a Project and an Operational Activity [128]	27
Table 2-4: Interaction Between Project and Asset Life Cycles [103]	29
Table 3-1: Institutional Themes, Sub-Themes and Indicators of the UN's CSD [39]	34
Table 3-2: Analysis of Agenda 21 Chapters Relevant to Institutional Sustainability [142]	35
Table 3-3: Analysis of Social Criteria Addressed by Various Literature Sources	41
Table 3-4: Benefits and Risks due to the Nature of Health and Safety Management [2]	48
Table 3-5: Comparison of Classification Theories of Stakeholder Oriented Behaviour [218]	60
Table 3-6: Primary Interests of Stakeholders [219]	61
Table 4-1: Documentation Studied	76
Table 4-2: Estimated Employment Creation During Construction of the Gas Fields [237]	78
Table 4-3: Possible Impacts on Health and Social Pathologies of the Gas Fields Project [239]	80
Table 4-4: Age of Chemical Facilities	89
Table 4-5: Analysis of Seven Sustainable Development Reports	103
Table 4-6: Matching Indicators and Criteria	104
Table 4-7: Other Criteria than can be Relevant in Decommissioning projects	118
Table 5-1: Three levels of relevance and techniques used for validation on each level	120
Table 5-2: 95% Confidence Intervals for the Corresponding True Proportions	123
Table 5-3: Survey Results on the Correct Level of the Individual Criteria	124
Table 5-4: Relevance of Social Criteria in the Asset Life Cycle	125
Table 5-5: Ways to Address Social Aspects in the Individual Life Cycle Phases	128
Table 5-6: Results of the Delphi Technique	130
Table 5-7: Summary of Validation Results	131
Table 6-1: Approaches to Incorporate Social Criteria in Project Management Methodologies	134
Table 6-2: Approaches that should be Followed to Incorporate Specific Criteria in Project Management Framework	136
Table 6-3: Possible Social Interventions	140
Table 6-4: Midpoint Categories and Units of Equivalence	142
Table 6-5: Midpoint Categories and Evaluation Methods	144
Table 6-6: Information Required for Social Footprint	145
Table 6-7: Project and Additional Information Required	147
Table 6-8: Summary of Results from Delphi Technique on Project Information Available	152

Table of Tables

Table 6-9: Summary of Social Footprint Information Available for Midpoint Categories	155
Table 6-10: Summary of Project Information Available for the Construction Project	158
Table 6-11: Summary of Social Footprint Information Available for the Construction Project	159
Table 6-12: Social Impact Indicators for a Construction Project	160
Table 6-13: Summary of Information Available for Operation Phase	161
Table 6-14: Social Impact Indicators for the Operational Phase	163
Table 6-15: Summary of Information Available for the Decommissioning Phase	164
Table 6-16: Social Impact Indicators for a Decommissioning Project	166
Table 6-17: PDRI Sections, Categories and Elements [299]	177
Table 6-18: AHP Nine-Point Evaluation Scale [307]	180
Table 6-19: Calculation of Resource Impact Indicators	182
Table 6-20: Example of Analytic Hierarchy Process	183
Table 6-21: Approaches to Adopt BSC to Include Social and Environmental Dimensions of Sustainable Development	185
Table 7-1: Timeline of Key Events Impacting on Social and Environmental Dimension of Sustainable Development [adapted from 321 and 322]	189

Abbreviations

APOLCOM: Air Pollution Liaison Committee of the Mpumalanga Province

BSR: Business for Social Responsibility

CAPCO: Chief Air Pollution Control Officer

CHDI: Corporate Human Development Index

CRT: Caux Round Table

CSD: Commission on Sustainable Development

CSI: Corporate Social Investment

CSR: Corporate Social Responsibility

DJSGI: Dow Jones Sustainability Group Index

EFQM: European Foundation for Quality Management

EIA: Environmental Impact Assessment

ETI: Ethical Trading Initiative

GRI: Global Reporting Initiative

HDI: Human Development Index

IDC: Industrial Development Corporation of South Africa

IFC: International Finance Corporation

IISD: International Institute for Sustainable Development

ILO: International Labour Organisation

LCA: Life Cycle Assessment

LCIA: Life Cycle Impact Assessment

NAPCOF: North-West Air Pollution Control Forum

NGO's: Non-Governmental Organisations

OECD: Organisation for Economic Co-Operation and Development

RII: Resource Impact Indicator

SAEM: South African Excellence Model

SAI: Social Accountability International

SA 8000: Social Accountability 8000 Standard

SIA: Social Impact Assessment

SII: Social Impact Indicator

SPLCM: Sustainable project life cycle management

SRI: Socially Responsible Investment

UN: United Nations

UNEP: United Nations Environmental Programme

WBCSD: World Business Council for Sustainable Development

WCED: World Commission on Environment and Development

1. Introduction

“In a legal sense a company is a person and the question arises: how human is it in its actions, how big is its heart and what services does it offer to the community in which it has its being and from which it derives its profit?”

- Anton Rupert (as cited in [1])

“Great corporations exist only because they are created and safe-guarded by our institutions; and it is our right and our duty to see that they work in harmony with these institutions”

- Theodore Roosevelt in 1901 (as cited in [2])

1.1 Changing Expectations

The formula for business success has traditionally been *“maximise profits while providing good conditions and security for employees and supplying customers with products or services at a price they are prepared to pay”* [3]. Businesses in general held an autocratic view of themselves as a castle or island and felt that outside interest should not prescribe to it [4]. Thus, although businesses made philanthropic contributions to society since the early 19th century, social problems were considered the responsibility of government and society in general, since *“the business of business is business”* [5].

For most of the past 150 years, government and civil society viewed the quest for economic growth and social equity as a major concern [6]. A wave of environmental concern started during the late 1960s in the United States of America (USA) and was experienced worldwide [7]. Governments and society started realising the interconnections between the environment, economy and social well-being. The 1987 World Commission on Environment and Development (WCED) acknowledged these interconnections by defining a new term, i.e. sustainable development, as *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*[8]. The commission acknowledged the limitations imposed by the state of technology and social organisation on the environment’s ability to meet society’s needs and stated that the essential needs of the world’s poor should be given overriding priority [9].

Since the term’s official conception, the concept of sustainable development shaped the political, economic and social environment in which all businesses operate [10]. The 1992 Earth Summit resulted in politicians, Non-Government Organisations (NGOs) and business leaders widely accepting that not one of the three main challenges facing humanity, i.e. environmental sustainability, economic growth and social equity, could be solved without solving the other two [Keating as cited in 6]. Most definitions of sustainable development therefore agree that the concept comprises social, environmental and economic dimensions with equal importance [11].

The rise of environmental concerns since the late 1960s together with the dramatic political and economic changes, i.e. the collapse of communism and other collective ideologies worldwide during

the 1980s and 1990s, lead to a radical re-think of businesses' role in the Western society [12]. The idea at the time was to reduce government's role by privatisation, tax-reductions, de-regulating business activities and reducing government spending and subsidies [12].

Business soon realised that the new power also entailed new responsibility [13], as society's focus shifted from government, while expecting more accountability from business for their activities' social and environmental impacts [14]. Society increasingly demanded greater corporate disclosure from business, while customers and investors supported these efforts by rewarding and punishing companies based on their perceived social performance [15]. With less and less people trusting business leaders to tell the truth [16], business were forced to move firstly from a "trust me" to a "tell me" world, and increasingly to a "show me" world [17].

Governments support society's efforts and are pressurising business to acknowledge their social responsibility by:

- Introducing the principles of sustainable development into laws, policies, standards and guidelines or formulating laws dealing with sustainable development aspects [18], for example:
 - 0 in South Africa, the King Report formalised the need for companies to realise that they no longer act independent from the societies in which they operate [19]. The King II report emphasised greater corporate accountability, transparency and stakeholder confidence;
 - 0 the South African constitution contains a guaranteed environmental right similar to at least 54 other constitutions worldwide [20];
 - 0 the European Union published a green paper on "Promoting a framework for corporate social responsibility" in 2001 [21];
 - 0 in the United Kingdom (UK), the Cadbury Report, a government initiative, established corporate governance benchmarks [19]. The Department of Trade and Industry also published an annual report on the relationship between business and society [22];
 - 0 the USA announced the Sarbanes-Oxley Act of 2002 in 2002. The act devotes an entire section to companies' corporate responsibility [23]; and
 - 0 France and the Netherlands published legislation forcing companies to report on environmental and social issues [24], while the European Union, Japan as well as the UK encourages and recommends environmental and social disclosures in annual reports [24].
- Partnering with business and NGOs [25], for example:
 - 0 in Madagascar, Prime Minister Jacques Sylla launched the *Growing Sustainable Business for Poverty Reduction Initiative* in January 2004. The initiative aims to reduce poverty in support of the millennium development goals by having international companies and local business promoting business activity [26];
 - 0 in the Nigeria Delta, governments, communities, NGOs, international aid organisations and business are working together to find sustainable ways to develop the oil rich but impoverished region [27]; and

- 0 the UK's Department of Trade and Industry joined forces with the British Standards Institution, Forum for the Future, a leading sustainability charity and think-tank, and AccountAbility in launching the Sustainability - Integrated Guidelines for Management (SIGMA) project in 1999. The SIGMA project aims to provide clear and practical advice to organisations wishing to make a meaningful contribution to sustainable development [28].

In the last decade, business thus experienced increased pressure to broaden its accountability beyond economic performance for shareholders to sustainability performance for all stakeholders [29]. Although society and government demands greater accountability from business, social problems have not disappeared in the new age of globalisation and commercial freedom. On the contrary, social problems have grown so immense that government alone can no longer be held responsible [30].

In the age of commercial freedom, business is the only institution powerful enough to foster the changes necessary for ecological and social sustainability [Hawken as cited in 31]. Although the number of multinational companies increased from 37,000 in 1990 to over 60,000 in 2002 [32], society started losing faith in businesses' ability to provide social and economic progress through economic growth [4]. The contract between business and society therefore evolved from the traditional minimalist view promoted by Friedman [5] to one holding forth on organisational imperative to work for social as well as economic improvement in an environmental responsible manner [33], i.e. align all operations with the principles of sustainable development.

1.1.1 Driving Forces for Incorporating Business Sustainability

Four different types of drivers for incorporating sustainable development principles in business practices were identified [34]. An adaptation of the identified drivers is illustrated in Figure 1-1.

The driving forces threaten businesses' licenses to exist, operate and sell. Researches realised as early as 1979 that business as a social institution depended on society's acceptance of its role and activities if it is to survive and grow, i.e. society must grant business a license to exist and operate [35]. Customers form part of society and grant business a license to sell. The license to sell thus also depends on customers' acceptance of business's role and activities. Since the mid 1990s, various authors highlighted the inherent risk to customers who became indulged in a sense of security and simply allowed the corporate community to continue business as usual [36]. A study by Britain's Business in the Community indicated that the percentage of customers believing that companies should show a high degree of social responsibility increased from 28% in 1998 to 44% in 2002 [37]. Social responsibility is thus becoming a prerequisite for a license to sell. The customers' expectations of business and standards for business are strongly based on societal norms. Higher degrees of social responsibility with the necessary supporting evidence or proof thereof will become prerequisites for licenses to exist, operate and sell.

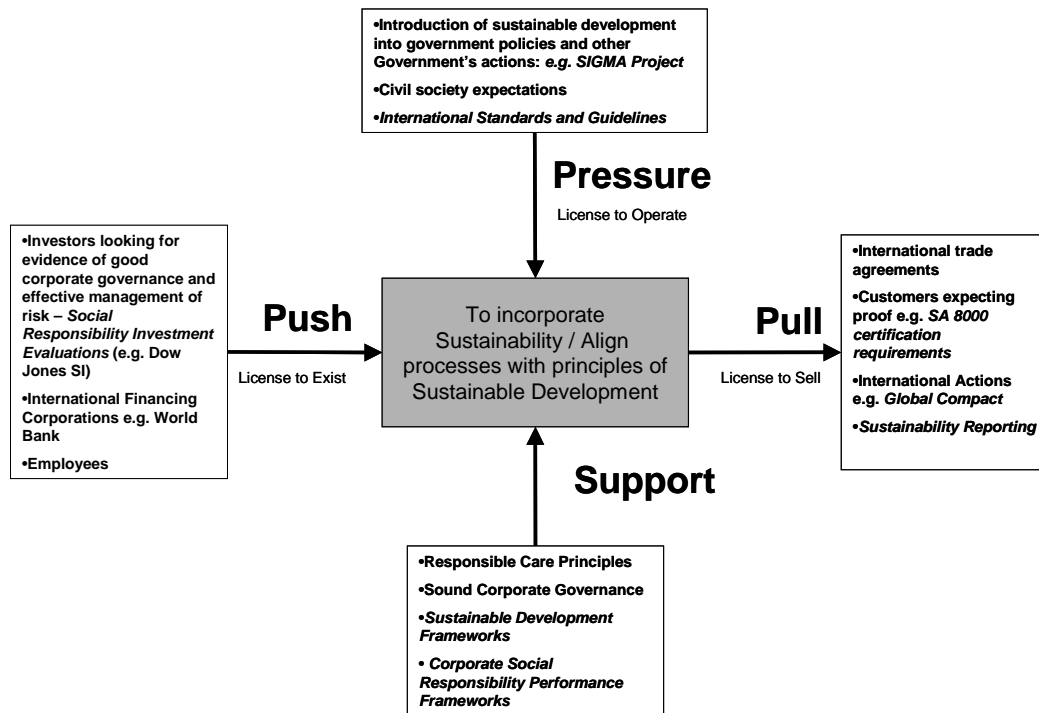


Figure 1-1: Drivers for the Incorporation of Business Sustainability [adapted from 34]

Occasionally, some driving forces manifest at two levels. For example, although SA 8000 is an International Standard, i.e. pressure driver, some customers require that their suppliers have SA 8000 certification, i.e. pull driver. The following driving forces were investigated (see Appendix A for details):

- International standards and guidelines (pressure driver and/or pull driver) - international standards and guidelines are definitely relevant to the concept of sustainable development and have a strong influence on business sustainability [28]. The SIGMA project as well as the Business for Social Responsibility (BSR) organisation issued publications on the influence of these standards and guidelines [28, 38]. Twelve international standards or guideline initiatives were chosen, based on either their international recognition or their specific importance to South Africa, given its government support or its originally intention for this country. The choices of the SIGMA project and the BSR have guided the choice of standards or guidelines;
- Frameworks to assess or measure sustainable development (support driver) - selecting frameworks was based on the following criteria:
 - 0 the indicator framework incorporates a set of measurable, quantitative or qualitative, indicators;
 - 0 all three dimensions of sustainability, i.e. environmental, social and economic indicators, are included in the framework;

- 0 the indicator framework has a broad focus, i.e. sustainable development at a national, community or company level. Product-only focused frameworks were not considered; and
- 0 the indicator framework is not strongly based on another framework or guidelines, e.g. frameworks have been proposed at a country level that are slight modifications of the United Nations' (UN's) framework [39,40];
- Corporate Social Responsibility (CSR) indicators, measures, standards and models (support driver and/or pressure driver and/or pull driver)
Frameworks, standards and models found during an extensive internet literature search were investigated;
- Socially Responsible Investment (SRI) prerequisites (push driver) - three indexes currently measures SRI companies only. These indexes are:
 - 0 Dow Jones Sustainability Index;
 - 0 FTSE4Good Index; and
 - 0 JSE SRI Index [41].Both the three indexes' as well as the oldest social investment fund's prerequisites were investigated;
- Expectations of international financing corporations, such as the international financing corporation (push driver).

Table 1-1 provides a summary of these driving forces.

The analysis of driving forces indicates that pressure is mounting for business not only to incorporate sustainable development in their internal operations but also to report on this incorporation. Since business's role in the sustainability challenge cannot be ignored, business should start addressing the sustainability issue. Business can, however, not do it on its own. The 2002 World Summit revealed that all three pillars of the tripartite world (i.e. business, government and society, see Appendix B for detail explanation) will have to work together in partnerships to solve the challenges and to achieve true sustainable development [42].

Sustainable project life cycle management: Incorporating social criteria in decision making

Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles

International Standards and Guidelines (Pressure and/or Pull Driver)					
Standard or Guideline	Dimension Addressed			Stakeholder Covered or Addressed by Standard or Guideline	Can a Company Endorse the Guideline or have the Standard Certified?
	Economic	Environmental	Social		
UN Global Compact [43, 44]		X	X	Employees and communities	Yes
Global Sullivan Principles [45]		X	X	Employees, community and business community	Yes
OECD Guidelines for Multinational Companies [46]	X	X	X	Employees, customers, business community, suppliers and society	No
Caux Round Table Principles for Business [47]	X	X	X	All	No
SA 8000 [48]			X	Employees, suppliers' employees, communities and suppliers' communities	Yes
AA 1000 Framework [49]			X	All	Not officially, but people who use this standard are requested to inform AA 1000
Investors in People [50]			X	Employees	Yes
Ethical Trading Initiative [51]			X	Employees, suppliers' employees, communities and suppliers' communities	Yes

Sustainable project life cycle management: Incorporating social criteria in decision making

Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Standard or Guideline	Dimension Addressed			Stakeholder Covered or Addressed by Standard or Guideline	Can a Company Endorse the Guideline or have the Standard Certified?
	Economic	Environmental	Social		
Natural Step [52]	X	X	X	All	
EMAS [53]		X		Employees	Yes
ISO 14000 [54]		X		Employees	Yes
ISO 9000 [55]			X	Customers, employees and suppliers	Yes
Excellence Models, e.g. Malcolm Baldrige Quality Program [56], European Model for Business Excellence [57] and South African Excellence Model [58]	X		X	Employees, customers, suppliers and society	Yes
Sustainable Development Frameworks (Support Driver)					
Name of Framework	Focus		Dimensions Addressed	Strengths	Weaknesses
	National/ Regional	Company			
UN's Commission on Sustainable Development's Indicators of Sustainable Development [59]	X		Social, environmental, economic and institutional	<ul style="list-style-type: none"> • Uptake by numerous countries, thus well-known • Comprehensiveness - 15 themes, 38 sub-themes and 58 indicators 	<ul style="list-style-type: none"> • Indicators cannot be adapted with ease to measure the company's sustainability

Sustainable project life cycle management: Incorporating social criteria in decision making

Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Name of Framework	Focus		Dimensions Addressed	Strengths	Weaknesses
	National/ Regional	Company			
Global Reporting Initiative (GRI) [60]		X	Social, Economic and Environmental	<ul style="list-style-type: none"> • Uptake of GRI guidelines by companies • Trust in GRI reporting guidelines by society 	<ul style="list-style-type: none"> • Complexity of some of the indicators • Numerous qualitative indicators, which makes comparisons more difficult • Transaction costs
IChem ^E Sustainability Metrics for the Process Industries [61] (based on Azapagic & Perdan's Framework [11])		X	Social, Economic and Environmental	<ul style="list-style-type: none"> • Framework is less complex and impact oriented 	<ul style="list-style-type: none"> • Framework favours environmental dimension • Uptake of framework not known
Wuppertal Institute's Indicators of Sustainable Development [62]	X	X	Social, Environmental, Economic and Institutional.	<ul style="list-style-type: none"> • Approach's focus on the interlinkages between dimensions 	<ul style="list-style-type: none"> • At the time of the analysis, the approach has not been implemented in a business environment yet [63]. The practicality and complexity of use can therefore not be judged
European Union's Conceptual Framework of Social Indicators [64]	X		Social	<ul style="list-style-type: none"> • Support by various nations • Thorough analysis of social issues 	<ul style="list-style-type: none"> • Other dimensions of sustainable development and interlinkages ignored

Sustainable project life cycle management: Incorporating social criteria in decision making

Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Corporate Social Responsibility: Indicator Frameworks, Standards and Models (Support Driver and/or Pressure Driver and/or Pull Driver)					
Description	Dimension Addressed			Stakeholder Covered or addressed by Standard or Guideline	Strengths and/or Weaknesses
	Economic	Environmental	Social		
Ethos Corporate Social Responsibility Indicators [65]		X	X	Employees, customers, suppliers, government, communities, society and the environment	<ul style="list-style-type: none"> • Address responsibility in supply chain (S) • Limited application, not wide uptake yet (W)
Social Venture Network: Standards of CSR [66]	X	X	X	Investors, employees, business partners, customers, community and the environment	<ul style="list-style-type: none"> • Standard places strong emphasise on stakeholder dialogue (S) • Standard is only a guiding document, thus no external verification of company adherence (W). • Uptake not known (W).
Danish's Ministry of Social Affairs' Social Index [67]			X	Employees, community, customers and suppliers	<ul style="list-style-type: none"> • Well tested tool with various applications (S) • No knowledge of uptake outside Denmark (W)
Corporate Social Performance Model (Wood [68], Wood & Wartick [69] and Hopkins [70])		X	X	Employees, community, customers and suppliers	<ul style="list-style-type: none"> • Model went through extensive refinements by various researchers (S) • No knowledge of uptake of model (W)

Sustainable project life cycle management: Incorporating social criteria in decision making
Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Socially Responsible Investment (SRI) Prerequisites (Push Driver)					
Name of SRI Index	Dimension Addressed			Strengths and Weaknesses	Are certain Companies Excluded Based on their Type of Activities?
	Economic	Environmental	Social		
Dow Jones Sustainability Index (DJSI) [71, 72, 73, 74, 75].	X	X	X	<ul style="list-style-type: none"> • The DJSI has grown into regional and specialised indexes (S) • Industry specific criteria is taken into consideration and questionnaires changes regularly (S) • The assessment criteria do not use quantitative data on the generation of emissions or consumption of resources and lacks a life cycle perspective. In addition, mostly qualitative information provided by the companies are used for rating purposes (W) 	Yes, alcohol, gambling and tobacco industries.
FTSE4Good Index [76]		X	X	<ul style="list-style-type: none"> • A specific dimension is dedicated to human rights. Three different sets of human rights criteria are used, based on the country in which the company operates (S). 	Yes, tobacco producers, companies manufacturing either parts or whole nuclear weapon systems, companies manufacturing whole weapon systems, owners or operators of nuclear power stations and companies involved in extracting or processing uranium.

Sustainable project life cycle management: Incorporating social criteria in decision making

Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Name of SRI Index	Dimension Addressed			Strengths and Weaknesses	Are Certain Companies Excluded Based on Their Type of Activities?
	Economic	Environmental	Social		
Johannesburg Stock Exchange (JSE) SRI Index [77, 78, 79].	X	X	X	<ul style="list-style-type: none"> Address South Africa's specific social problems (S) 	No
Domini 400 Social Index SM [80, 81]		X	X	<ul style="list-style-type: none"> The Domini 400 Social Index was the first of its kind (S) The number of companies are limited to 400 and companies can be removed (S) After ten years, this fund has proven that instead of limiting investment performance, screening firms based on environmental and social, it may lead to higher returns on investment (S) 	Yes, all companies deriving two or more percent of its profit from the sales from military weapons systems, companies deriving any revenue from manufacturing alcoholic or tobacco products, companies deriving any revenue from providing gambling products, companies servicing or owning interests in nuclear power plants or deriving electricity from nuclear power plants in which it has an interest.

Sustainable project life cycle management: Incorporating social criteria in decision making
Chapter 1

Table 1-1: Summary of Examples of Driving Forces to Align Business Practices with Sustainable Development Principles (continues)

Expectations of International Financing Corporations (Push Drivers)					
Name of Guideline	Dimension Addressed			Advantages for Customers	Advantages for Financing Corporations
	Economic	Environmental	Social		
Equator Principles [82]		X	X	<ul style="list-style-type: none"> • Commonality of approach amongst banks saves sponsors the burden of producing different environmental assessments for different banks and from trying to meet different standards amongst banks • Implementing transactions more quickly by getting it right the first time • Having more certainty in project implementation • Having a more secure, long-term investment • Gaining a reputation advantage 	<ul style="list-style-type: none"> • Using common terminology in assessing environmental and social issues • Using a common framework for implementation and documentation • Increasing productivity through reduced transaction time, i.e. getting it right the first time • Having more certainty in closing project financings • Having a safer project loan • Gaining a reputation advantage

1.2 The reaction of business to the sustainability challenge

The concept of sustainable development is inherently vague [83]. Although, understood intuitively, it remains difficult to express in concrete, operational terms [84]. In 1992 there were already more than 70 definitions for sustainable development [85]. The International Institute for Sustainable Development (IISD) realised that the concept of sustainable development should be defined in terms familiar to the business community. This resulted in sustainable development for business, i.e. business sustainability, being defined as “*adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today, while protecting, sustaining and enhancing the human and natural resources that will be needed in the future*” [86]. There are nevertheless also more than one definition for business or corporate sustainability. A few of these definitions are listed in Table 1-2. Appendix C provides a detailed description of business sustainability as well as an overview of the business path towards corporate responsibility.

Table 1-2: Definitions for Business or Corporate Sustainability

Corporate sustainability can be defined as meeting the needs of a firm’s direct and indirect stakeholders without compromising the ability to meet the needs of future stakeholders as well [6].
Corporate sustainability is any state of a business in which it meets the needs of its stakeholders without compromising its ability to meet their needs in the future. A company has to ensure that its operations are sustainable in regard to economic, social and environmental performance [87].
Business sustainability is a business approach to create long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social development [88]

As indicated earlier, pressure is mounting on business to align all activities and operational processes with the principles of sustainable development [89], i.e. incorporating business sustainability in operational practices. The following three distinct levels within an organisation can be subjected to change:

- the strategic level;
- the process or methodological level; and
- the operational level [90].

For business sustainability to manifest in all business practices, values and policies need to change and adapt in all three levels within the organisation. Businesses have already made a large amount of progress. Figure 1-2 indicates some of the actions and initiatives businesses have undertaken.

In 2002, PricewaterhouseCooper’s Sustainability Division conducted a survey of 140 companies based in the USA to determine what, if any, business sustainability initiatives these companies have been implementing [91]. Figure 1-3 shows some of the survey’s statistics.

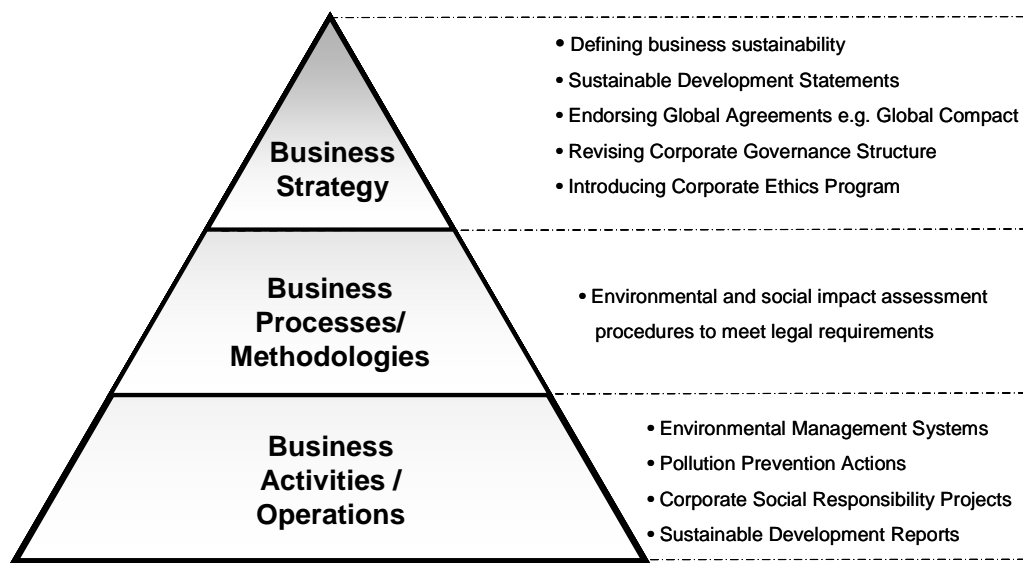


Figure 1-2: Initiatives to Introduce Business Sustainability Concepts in the Organisation

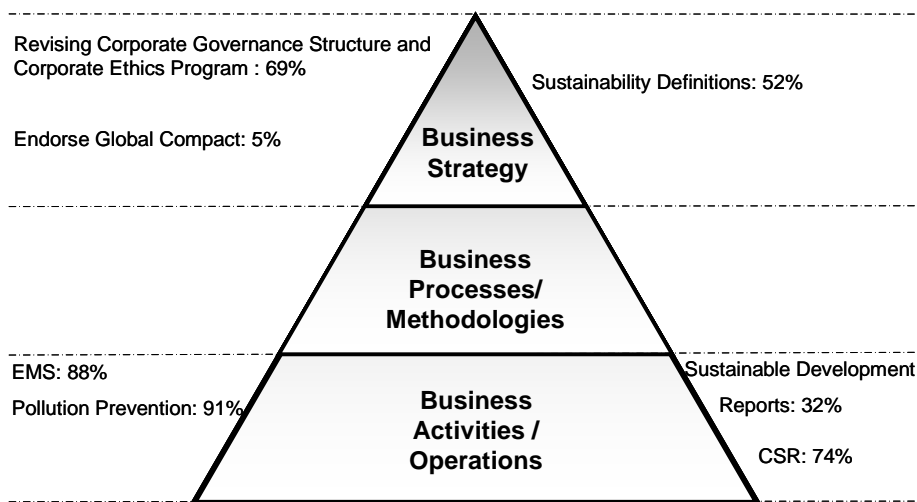


Figure 1-3: Incorporation of Sustainability within Different Levels in an Organisation

Figure 1-3 clearly indicates that the emphasis on incorporating business sustainability falls on the operational level and focuses on the environmental dimension. To some degree, the concept is starting to feature on a strategic level. The survey also revealed that 72% of the participating 101 Fortune 1000 companies failed to include the risks and/or opportunities of sustainability in their evaluation processes used for projects, investments and transactions, which are key elements of the methodological level. The survey's conclusion was that organisations took far less initiatives on the methodological level compared to the other two.

Research by IWOe-HSG supports this conclusion and reveals that traditional business management methodologies are solely geared towards financial performance and therefore exclude environmental and social sustainability aspects [92].

Practical tools, which systematically include sustainability within the evaluation processes, are needed to align business methodologies with the principles of sustainable development [93, 94, 95]. Project management methodologies, which are a core business methodology for most companies, are not excluded from this requirement. The focus of this research is specifically on aligning project management methodologies with these principles.

1.3 Current Status of Sustainable Project Life Cycle Management (SPLCM)

1.3.1 Project Management

A project can be defined as “*a temporary endeavour undertaken to create a unique product or service*” [96] or as a finite piece of work directed to achieve a stated business benefit within certain defined cost and time constraints [97]. In recent years, projects became strategic management tools, resulting in project management becoming a core competency and a necessity for survival [97, 98]. The nature of project management, however, changed significantly since 1960s. Companies in the new millennium are managing projects on a far more informal basis with less paper work by relying on techniques such as checklists for end of phase reviews [98]. An appropriate methodology and a clear understanding of the life cycle phases are critical to these informal project management approaches [98]. A benchmarking study conducted by Buttrick [97] confirmed that companies successful in project management all use a company-specific, simple and well-defined project management framework that defines a staged approach for all projects under all circumstances. A best practice study by the Product Development and Management Association (PDMA) supports this finding with its finding that 68% of leading United States of America product developers use some type of Stage-Gate®¹ process [99, 100]. A project management framework based on a Stage-Gate® process usually specifies major activities and deliverables for each project phase as well as guideline questions for the phase end reviews or gates (see Figure 1-4 for an example of such a framework which is used in the South African process industry).

¹ “*Stage-Gate® is a widely employed product development process that divides the effort into distinct time-sequenced stages separated by management decision gates. Multifunctional teams must successfully complete a prescribed set of related cross-functional tasks in each stage prior to obtaining management approval to proceed to the next stage of product development*” [100]

Sustainable project life cycle management: Incorporating social criteria in decision making
Chapter 1

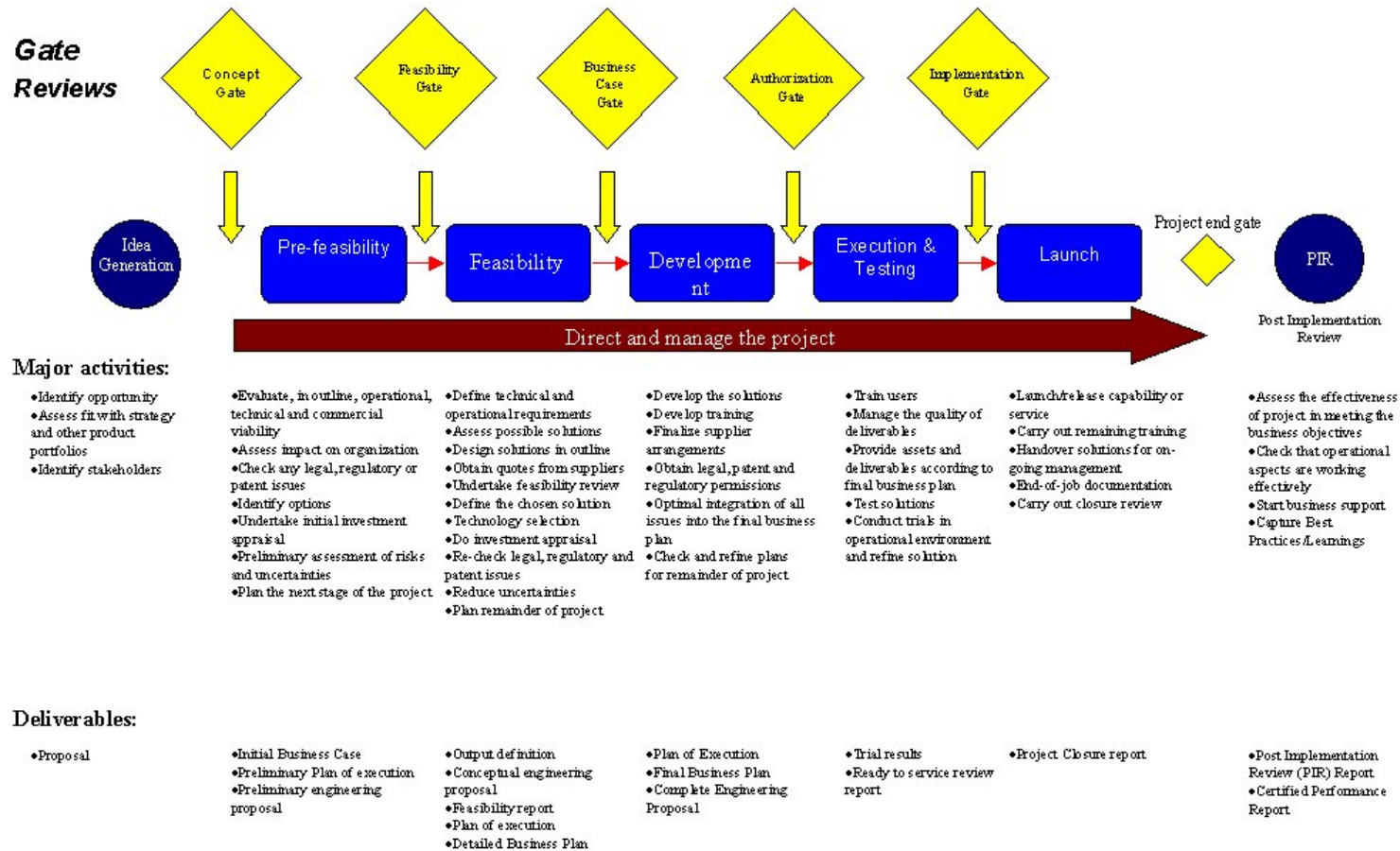


Figure 1-4: Staged Project Life Cycle Management Framework (adapted from [97, 98, 101])

1.3.2 Sustainable Project Life Cycle Management

For projects to support sustainable development, sustainable development concepts must be integrated in planning and managing the project over the whole life cycle. Projects both affect and are affected by its environment (physical as well as social environment) and these facts need to be recognized from the definition phase onwards [102]. Sustainable development aspects should thus feature in each phase’s major activities and deliverables. Triple bottom line decision-making, i.e. environmental, economic and social, should be used during project appraisal.

Given the growing importance of sustainable development, companies are also increasingly accountable for an implemented project’s impact on the society, environment and economy, long after the project has been completed, i.e. beyond the normally considered project life cycle [96]. The project life cycle should thus also address possible impact of the life cycles of its “products”.

It is evident that although economic aspects of sustainable development are addressed efficiently (see activities and deliverables in Figure 1-4), the social and environmental aspects are not mentioned directly. In the South African context, the deliverables’ content was studied more closely to identify any addressed environmental and social activities or aspects. Figure 1-5 summarises the main activities and appraisal issues concerned with environmental and social aspects over a project’s life cycle² [103].

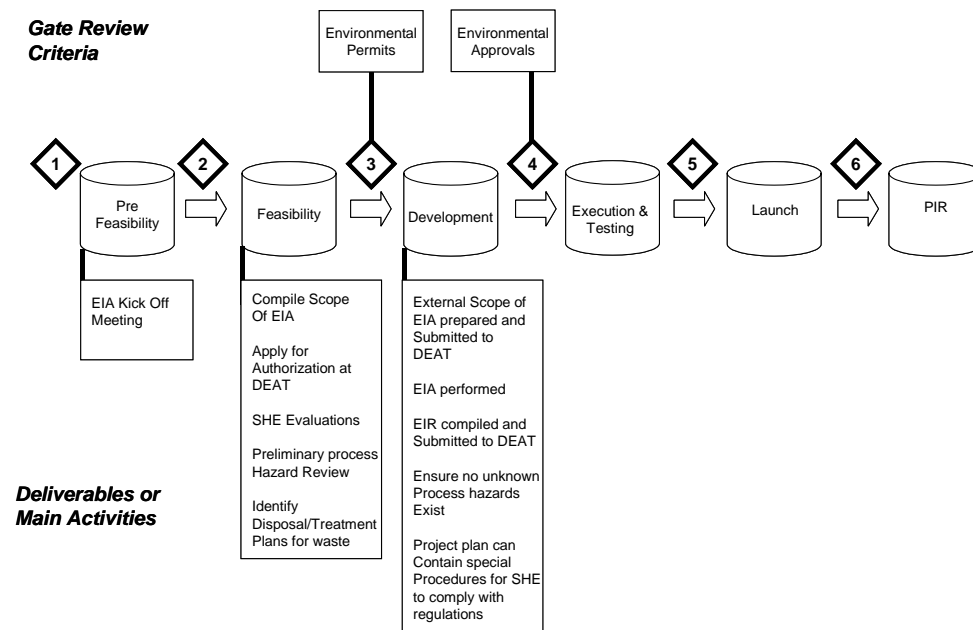


Figure 1-5: Extent of Current Environmental and Social Considerations in a Project’s Life Cycle

² The project life cycle depicted in this figure was chosen for its resemblance to project life cycles in the South African process industry.

Although social aspects are currently not specifically mentioned in either the activities or deliverables of each phase, the social aspects can form part of a formal Environmental Impact Assessment (EIA). Furthermore, following the national Department of Environmental Affairs and Tourism's (DEAT's) formal guidelines on conducting EIAs results in environmental aspects being addressed to a limited extent [104] during some of the project life cycle phases. This is in line with the worldwide trend that environmental sustainability aspects are more integrated into management practices than social aspects [105].

The figure also indicates that social factors are currently not included in the normal project appraisal process, with environmental factors only being addressed with one question at two of the six appraisal gates. The project appraisal process therefore fails to address all aspects of sustainability effectively..

The above can be described as a worldwide phenomenon, since surveys indicate that the project appraisal process focuses mainly on financial and technical viability, while social and environmental aspects are considered to fall outside the normal appraisal process [106]. Furthermore, the strong emphasis on efficiency in the traditional project appraisal process may lead to outcomes that are unacceptable from an intergenerational equity point of view [107]. Intergenerational Equity is one of the two core principles of sustainable development, the other one being intra-generational equity [108].

A survey was used to test the initial conclusions. Ten companies in the South African process industry were identified based on the Financial Mail's Top Companies 2002 report [109]. The existence of a standardised project management framework as well as the degree to which such a framework addresses social sustainable development aspects were analysed in 2003. The survey focussed solely on social business sustainability, as that is the focus of the research. The survey's response rate was 80%, as certain companies viewed the information as too sensitive to share. The results are summarised in Table 1-3.

Table 1-3: Results of Survey in the South African Process Industry

	Answers (in percentage)
Existence of standardised project management framework:	
• Yes	75%
The level of social aspects within the framework:	
• Briefly mentioned	
• Included as part of EIA	50%
• Detail activities, deliverables and component of decision-making	
• View information as too sensitive to answer	37.5%
• Not applicable	12.5%

The survey as well as literature and other research outputs therefore indicate that current project management frameworks require revision to align it with the principles of sustainable development and to ensure that a project is managed according to practices that will contribute to sustainable development goals [110, 111]. Although attempts have been made to incorporate the environmental dimension of sustainable development in project management methodologies [103, 112], no evidence of research focusing on incorporating the social dimension of sustainable development in project management methodologies could be found.

1.4 Research Problem and Approach

1.4.1 Research Problem

It is thus evident that the pressure is mounting on businesses to incorporate business sustainability in their internal operations by aligning it with the principles of sustainable development. Project management methodologies are integrally linked to these pressures, as core business activities cannot be aligned with sustainability principles if the means of implementation, i.e. through projects, do not incorporate all three aspects of business sustainability.

The initial investigation indicated that incorporating the social dimension in project management methodologies has been largely overlooked. However, the focus of the international community is moving from environmental sustainability to social sustainability [113]. The investigation into driving forces (see section 1.1.1 and Appendix A) concluded that there currently is no international standard or guideline, sustainable development framework, CSR framework or SRI questionnaire that can directly be applied to projects to ensure alignment with sustainable development. An acceptable model aimed at addressing the various aspects from a project management perspective therefore has to be developed. Prerequisites for developing this model includes defining the various life cycles involved in projects and characterising the proposed model's various elements or aspects. Three distinct elements of such a model can be distinguished, namely:

- a comprehensive sustainability framework to assess projects during the early life cycle phases in terms of sustainability consequences of the project's future implemented products. The framework will consist of various criteria and indicators;
- evaluation methods and/or tools to assess individual projects' sustainability performance against the framework developed.; and
- decision-making techniques to ensure an efficient and transparent triple bottom line decision and reporting process.

The research problem is thus that such a model does currently not exist.

1.4.2 Research Questions and Objectives

Since work has already been done on incorporating environmental sustainability in project management methodologies (see section 1.3.2), the study's main research objective is to develop the different elements specified for the incorporation model for social business sustainability (see the conceptual model for the research in Figure 1-6).

The main research questions and sub-research questions therefore are:

- Which life cycle should be considered when evaluating the project's possible impacts?
- What social business sustainability impacts or aspects should be considered in the project life cycle?
 - 0 What are the social aspects relevant to project management within the process industry?
 - 0 Which of these possible social impacts of a project should project managers and/or project sponsors consider during project decision-making?
 - 0 What level of impacts/consequences must be considered, i.e. where should the boundaries be?
- How should project management methodologies be adopted to ensure incorporation of social business sustainability?
 - 0 How, if possible, can the identified social aspects and consequences be measured?
 - 0 Which deliverables or activities should be included in determining or predicting the project's social performance?
 - 0 How should the project management methodology be changed to ensure a life cycle management approach?
 - 0 What gate questions can be added to guide decision-makers in addressing the project's social sustainability performance?
 - 0 What other decision-making methods can be developed or used to ensure a triple bottom-line, i.e. economic, social and environmental bottom line, decision?

The results of these research questions would make it possible to define and test the proposed model's first two elements from a social perspective. Although the last element, i.e. decision-making, will be analysed and explored, it cannot be tested in isolation from the other dimensions of sustainable development. Figure 1-6 shows the conceptual model for the research. The research is focused on the process industry in developing countries.

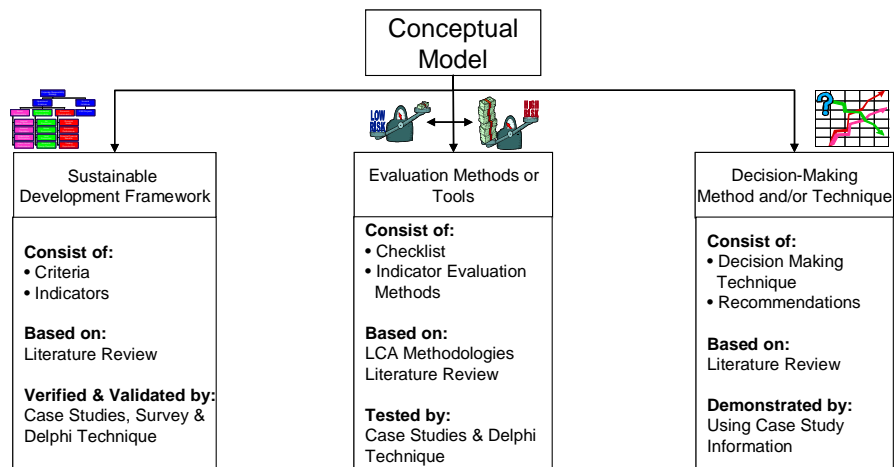


Figure 1-6: Conceptual Model

1.4.3 Research Approach

The study is aimed at developing the social dimension of a model that will ensure incorporation of all dimensions of sustainable development in project management methodologies. The research consists of a theory or model-building methodology. The three main research questions is the anchor point of the approach. Each will be addressed in a separate phase. A retrospective approach is proposed, as each research question will build on the previous. If applicable, the phase outcomes will be verified and validated before starting with the next phase. Figure 1-7 shows the three main research questions with each investigation phase's main elements.

Verifying and validating the phase outcomes will be applied after the second (WHAT?) and during the third (HOW?) phase. Case study research together with expert panels and other nominal group interviewing techniques will be applied. The research design thus relies on three methods of inquiry, namely interviewing, observation and document analysis, with interviewing being used most often. The various aspects of different types of group interviews that can be used are summarised in Table 1-4 [114].

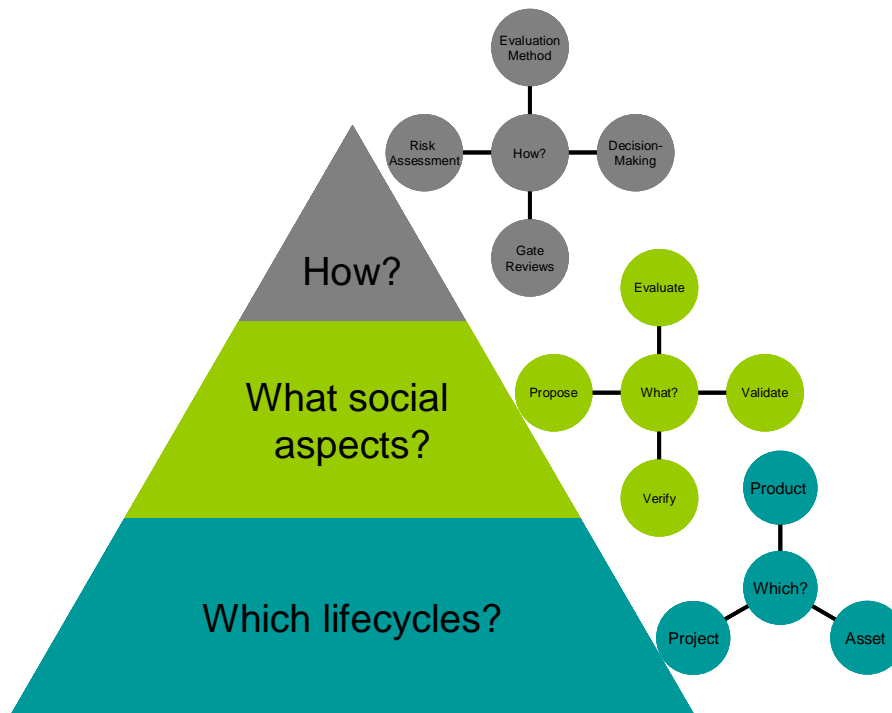


Figure 1-7: Research Approach

Table 1-4: Types of Group Interviews [114]

Type	Setting	Role of Interviewer	Question Format	Purpose
Focus group	Formal-preset	Directive	Structured	Exploratory pretest
Brainstorming	Formal or informal	Non-directive	Very structured	Exploratory
Nominal/Delphi	Formal	Directive	Structured	Pretest exploratory
Field, natural	Informal Spontaneous	Moderately non-directive	Very structured	Exploratory phenomenological
Field, formal	Preset, but in field	Somewhat directive	Semi-structured	Phenomenological

A qualitative study based strongly on an interviewing inquiry strategy is thus proposed.

1.5 Structure of the Thesis

The thesis is divided into seven chapters. Five of these chapters discuss the research using the phased approach (see section 1.4.3). Figure 1-8 shows which chapter address the relevant research element.

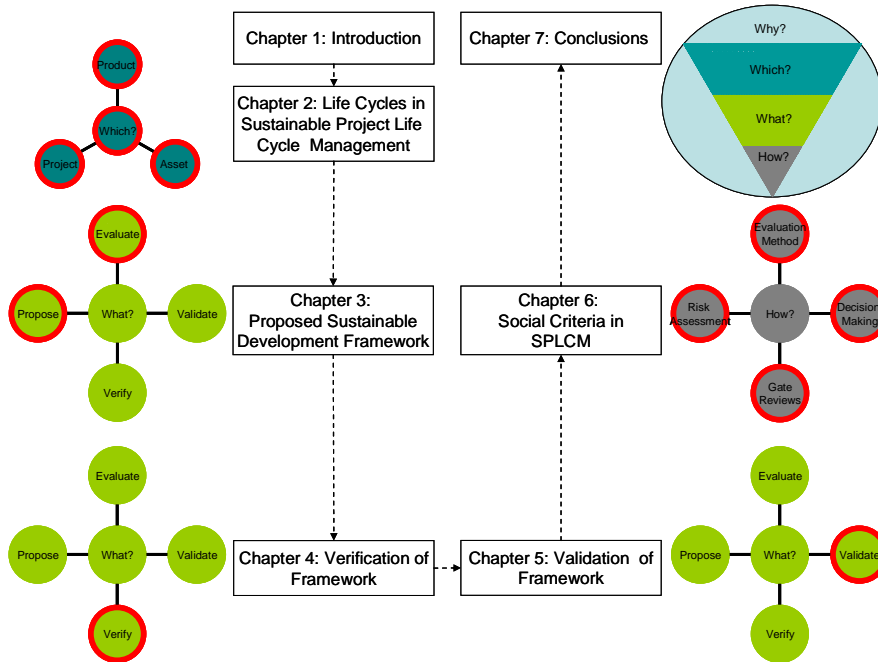


Figure 1-8: Structure of the Thesis

1.6 Conclusion

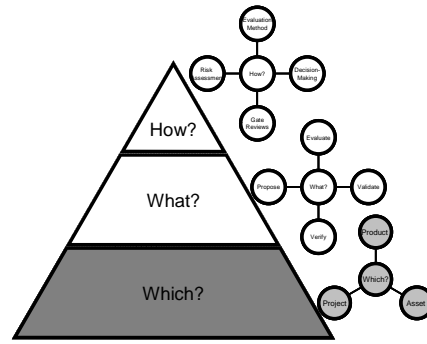
Various driving forces compel globally competitive businesses to address incorporating all sustainable development issues into business practices. These driving forces originate from both the society as well as government. The progress made in aligning all business activities with the principles of sustainable development are increasing important and in many cases even essential. Project management methodologies are not excluded and it is evident that current methodologies fail to incorporate all sustainable development aspects. The research in this thesis will develop the social dimension of a model to be used in incorporating sustainability in generic project management methodologies. Various approaches to ensure adherences to triple bottom line decision-making, i.e. including environmental and social aspects as well as economic performance in the decision-making processes, will be investigated. A phased approach centred around the three main research questions will be used. These are:

- Which life cycle should be considered when evaluating the project's possible impacts?
- What social business sustainability impacts or aspects should be considered in the project life cycle?
- How should project management methodologies be adopted to ensure incorporation of social business sustainability?

2. Life Cycles Involved in Projects

2.1 Introduction

A project can be defined as a temporary undertaking with a specific objective as well as a definite beginning and end [98] or as “a temporary endeavour undertaken to create a unique product or service” [96]. Companies are increasingly accountable for implemented projects’ impacts on the society, environment and economy long after the project’s completion, i.e. beyond the normally considered project life cycle [96].



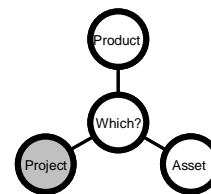
With these definitions of a project as a departure point, it stands to reason that the project itself will have minimal economic, environmental and/or social consequences, since it is temporary and merely a vehicle to implement change, i.e. the product or service. The project’s “product” or deliverables will, however, have economic, environmental and social consequences and impacts. Companies are specifically accountable for these impacts. This concept is supported in projects’ financial analyses, where the financial implications of the project’s deliverables are included in the profitability, Return on Investment (ROI) and Net Present Value (NPV) calculations [115].

This thesis focuses specifically on the process industry, in which a project can be described as a vehicle to implement the capital investment in a new or improved asset. Since this type of project results in a tangible deliverable, it is essential to distinguish between the project life cycle and the life cycle of its deliverable [116], i.e. asset in the process industry scenario. The implemented asset is normally used to manufacture products, which are either further refined or sold directly to the customer. The following three distinct life cycles are involved:

- project life cycle;
- asset life cycle, which can also be referred to as process life cycle; and
- product life cycle [103].

2.2 Project Life Cycle

A project life cycle can be defined as “an orderly sequence of integrated activities, performed in phases, leading to success” [117]. The complex nature as well as the diversity of projects results in industries, or even companies within the same industry sector, failing to agree on the life cycle phases of a project [98]. Various project life cycle approaches therefore exist in literature, e.g. the control-oriented model, the quality-oriented model, the risk-oriented model, a fractal



approach to the project life cycle as well as some company-specific project life cycles [118]. Furthermore, there is no consensus on the number of phases, which constitute a project life cycle, neither on the names used to describe these phases. Table 2-1 summarizes project life cycle phases proposed by various researchers, while Table 2-2 shows seven possible generic life cycle phases in a project, together with a basic description and alternative names for each phase [97]. Such a generic project life cycle can be tailored to suit individual projects' requirements. For example, a number of phases can be combined or phases deemed irrelevant to the type of project can be omitted.

Table 2-1: Phases in the Project Life Cycle

Researcher	Number of Phases	Phases
Bonnal, Gourc and Lacoste [118]	5	Initiation/Concept/Identification; Feasibility Phase; Basic Design; Detailed Design; Construction; Turnover/Start-up
Quality-Oriented [118]	3	Conceptualisation, Materialisation, Turnover
Stage-Gate ® (Cooper and Edgett) [100]	7	Discovery Stage, Scoping, Build Business Case, Development, Testing and Validation, Launch
Buttrick [97]	7	Idea generation, Pre-feasibility, Feasibility, Development and execution, Commissioning, Launch, Post Implementation Review (PIR)
Merrifield [119]	6	Idea, Feasibility Demonstration, Product/Process Development, Pilot Plant, Semi-Commercial, Full-Scale Production.
Buttrell [120]	5	Concepts, Production Prototype, Field Testing, Marketing Development, Field Sales
Hoo [121]	5	Strategic Analysis/Planning, Idea Generation/Screening, Development, Test Marketing, National/Regional Launch
Feldman & Page [122]	6	Exploration, Screening, Concept testing, Business Analysis, Development, Market Testing
Eggers [123]	6	Idea Formulation, Identification, Feasibility Studies, Financing, Implementation, Evaluation
Yahie [124]	5	Identification, Preparation, Appraisal, Implementation, Evaluation
Picciotto et al [125]	4	Listing, Piloting, Demonstrating, Mainstreaming
Ward and Chapman [126]	4	Conceptualisation, Planning, Execution, Termination
Morris [127]	4	Feasibility, Planning and Design, Production, Turnover and Start-up

Table 2-2: Life Cycle Phases in a Project [97]

Phase Names	Alternative Names	Description of Phase
Idea generation	Proposal Concept Initiation Ideation	In this phase, the idea for a new project is generated and the initial proposal describing the business need must be prepared. This phase does not require a formal project plan.
Pre-feasibility	Initial investigation Initial assessment Preliminary Investigation Evaluation Research	The goal of this phase is to evaluate the existing proposal in terms of financial, operational and technical viability as well as against the company's strategy. Overlapping or synergy with other projects should also be checked.
Feasibility	Detailed Investigation Definition Business case Evaluation Authorisation	The optimum solution to address the business need must be identified and defined. All areas of this solution must be analysed and assessed to determine killer concerns and risks.
Development and execution	Implementation Realisation Production Construction Build Develop and test	This phase involves design, development, creation and building the chosen solution. The supporting system, manuals, business processes and training for the solution must also be developed during this phase.
Commissioning	Trial Beta test Validation	In this phase the solution is tested in an operational environment. The purpose is to validate the solution's acceptance and capabilities.
Launch	Release Completion Implementation Handover Acceptance	The project is handed over to the business units and thus released to the operational environment during this phase. This phase also marks the beginning of operational support.
Post Implementation Review (PIR)	Business review Project audit Post project review	After sufficient time, i.e. 9 - 15 months, the project should be assessed to determine whether the benefits were delivered and what the project's impact was on the business. Lessons learned should be captured for future reference.

There is no agreement on a generic project life cycle model in the South African context. Companies within the South African process industry also use different project life cycles. The analysis of the content of project management frameworks (see section 1.3.2) showed that project life cycles with a more practical approach are used in the process industry. These project life cycles show similarities with those proposed by Buttrick [97], Bonnal, Gourc and Lacoste [118], Cooper and Edgett [100], Merrifield [119], Eggers [123], and Ward and Chapman [126]. The thesis chose a generic project life cycle that entails similar phases to those found in the South African process industry, since the process industry is the main focus of the research. Figure 2-1 depicts the generic project life cycle, which is used for the remainder of the thesis.

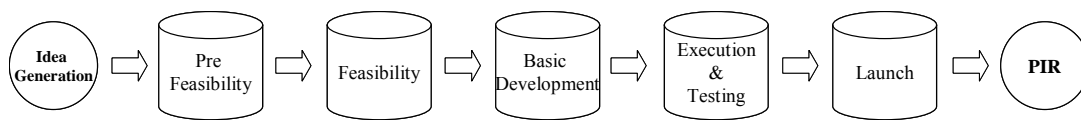
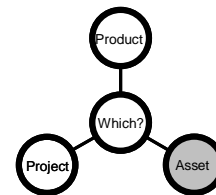


Figure 2-1: Generic Project Life Cycle

2.3 Asset Life Cycle

The project normally delivers a “product”, which in the process industry is a new or improved asset, also referred to as an operational activity. The project life cycle and the asset life cycle contribute to the same value chain, i.e. the project implements the asset. These two cycles are



consequently often viewed as one life cycle. Nevertheless, there are definite differences between a project and an operational activity or asset, as can be seen in Table 2-3 [128].

Table 2-3: Comparison Between the Characteristics of a Project and an Operational Activity [128]

Project	Operational Activity
<ul style="list-style-type: none"> • Produces a new specific deliverable • A defined start and end • Multidisciplinary team • Temporary team • Uniqueness of project • Work to a plan within defined costs • Canceled if objectives cannot be met • Finish date and cost more challenging to predict and manage 	<ul style="list-style-type: none"> • Delivers some product • Continuous • Specialised skills • Stable organisation • Repetitive and well understood • Work within an annual budget • Continual existence almost assured • Annual expenditures calculated based on past experience

The asset implemented by a project can take various forms. It has been argued that the traditional system life cycle phases [129] could be applied to an asset [130] (Figure 2-2 shows this asset life cycle).

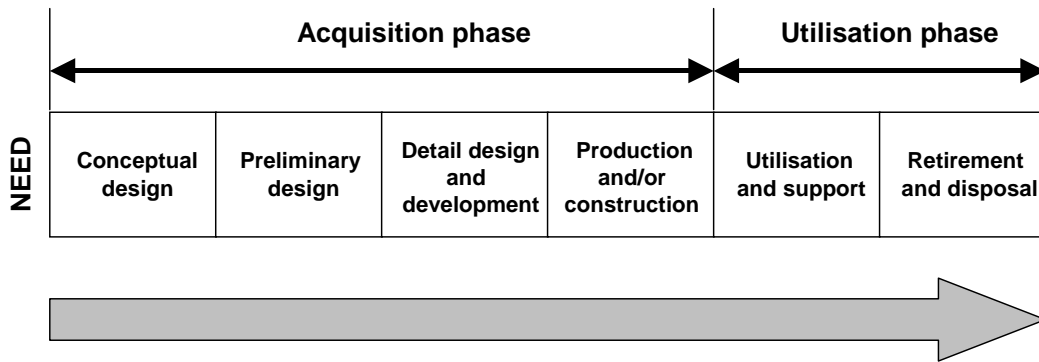


Figure 2-2: System Life Cycle Applied to Assets [130]

In the process industry the asset would normally be a new or improved sub-process or an entire plant or process. A typical plant or process life cycle (Figure 2-3) consists of six phases, namely two design phases, a construction phase, a start-up/commissioning phase, an operation/maintenance phase and a decommissioning phase [Intergraph as quoted in 103].



Figure 2-3: Plant or Process Life Cycle [103]

If all design phases are treated as one phase and the start-up and commissioning phases are treated as part of the construction phase (see Figure 2-5), the asset life cycle can be simplified to four phases (see Figure 2-4). An asset’s design phase can also be the selection phase of manufacturing equipment if the asset is purchased and not an in-house design.

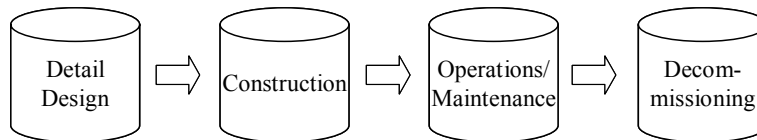


Figure 2-4: Generic Asset Life Cycle

The project is the vehicle to design, where applicable, and implement the asset. Although two distinct life cycles are involved, the two life cycles still interact. The project normally ends after the asset commences stable operations according to the performance requirements, also referred to as the “handover to operations” [131]. The design, construction and a small part of the operational phase are therefore completed during the project’s life cycle. A post-implementation review will take place when the asset is in its operational life cycle. Figure 2-5 and Table 2-4 shows the interaction between the two life cycles, i.e. project and asset life cycles.

Table 2-4: Interaction Between Project and Asset Life Cycles [103]

Asset Life Cycle Phase	Project Life Cycle Phase
Detail design	Pre-feasibility Feasibility Basic development Execution and testing
Construction	Execution and testing Launch
Operations	Launch Post implementation review

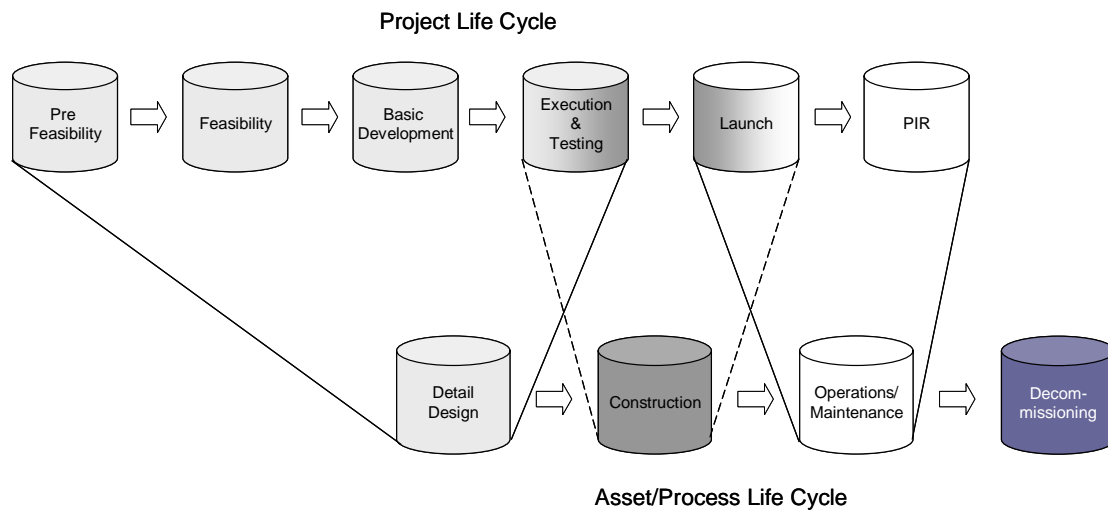
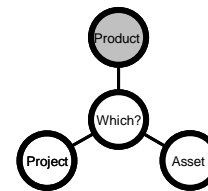


Figure 2-5: Interaction Between the Project and Asset Life Cycles

2.4 Product Life Cycle

The main goal when implementing a new asset is to manufacture a product or to improve the manufacturing of a product to meet the customer’s needs. In recent years, product life cycles played an important role in the field of



Life Cycle Assessment (LCA), which is used to evaluate products’ environmental performances [132]. A product life cycle consisting of five phases has been proposed from an LCA perspective [133] (see Figure 2-6). These phases are pre-manufacturing, product manufacturing, product delivery, product use as well as refurbishment, recycling and disposal.



Figure 2-6: Product Life Cycle [133]

Another approach is to apply the generic systems life cycle (shown in Figure 2-2) to products [134]. The difference between these two life cycles is that the first uses a supply chain perspective while excluding the product’s design phase. This cycle also focuses specifically on all the activities necessary to produce the product, i.e. use the product and discard the product.

The second approach starts a product’s life cycle with need identification and considers supply chain activities as part of the production phase. A Socio-Eco Efficiency (SEE) Analysis Tool was developed

internationally to assist management in orienting the product portfolio according to sustainability criteria. The tool is an instrument that compares various product or process alternatives with each other in terms of environmental, social and economic impacts [135]. The tool can be applied during product development to ensure that new products are aligned with the principles of sustainable development.

This research therefore uses a supply chain focused product life cycle view, as tools already exist to incorporate business sustainability in product development.

In the process industry, the asset is used to manufacture the product in various steps. The two life cycles are therefore bound to interact. The assets are manufactured, i.e. the product manufacturing life cycle in the asset life cycle's operational phase. Figure 2-7 shows the interaction between the asset and product life cycle.

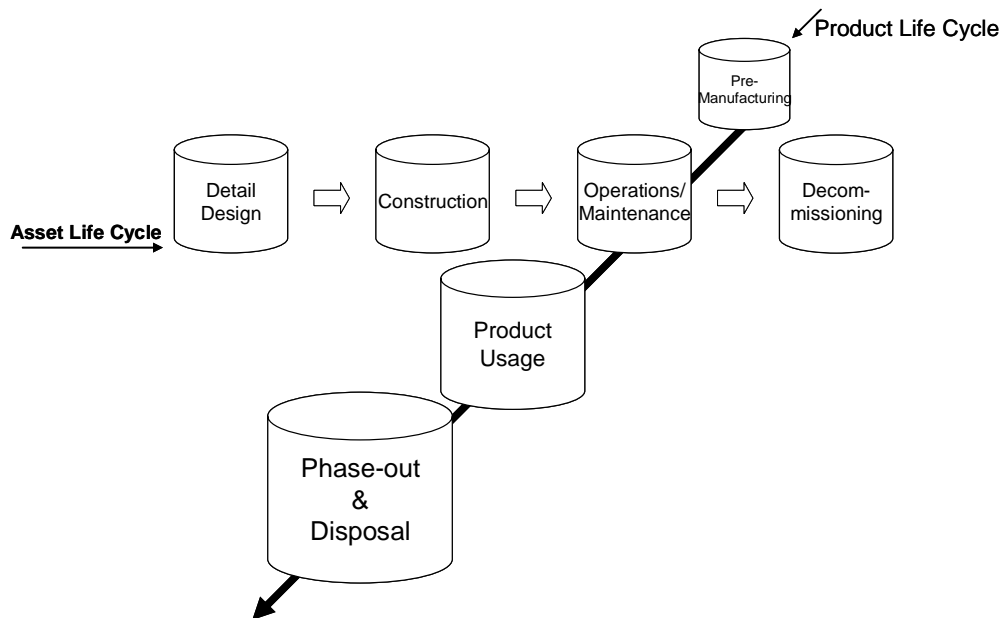


Figure 2-7: Interaction Between the Asset (Process) and Product Life Cycle

2.5 Conclusion: Life Cycle Interaction

In conclusion, the asset life cycle resulting from the project and the subsequent product life cycle resulting from the asset have economic, social and environmental consequences, which are in turn associated with an implemented project (see Figure 2-8). Aligning project management methodologies with sustainable development principles therefore requires that the sustainability consequences of these asset and product life cycles must be considered during the project life cycle and specifically during project appraisals at the various decision gates (see Figure 1-4).

In the environmental dimension of sustainability, initiatives such as Design for Environment (DFE) [136] have been developed. These initiatives have a pro-active approach to incorporate environmental aspects early in the design phase of processes and products. To follow the same pro-active approach, social aspects have to be considered from the first phase in the project life cycle to ensure the biggest influence on the design. To simplify the various life cycle interactions, the following asset life cycle phases' social consequences and impacts will be evaluated and/or addressed in each project life cycle phase, i.e. Construction, Operation and Decommissioning. The social consequences and impacts of the product's life cycle will be grouped under the Operation phase.

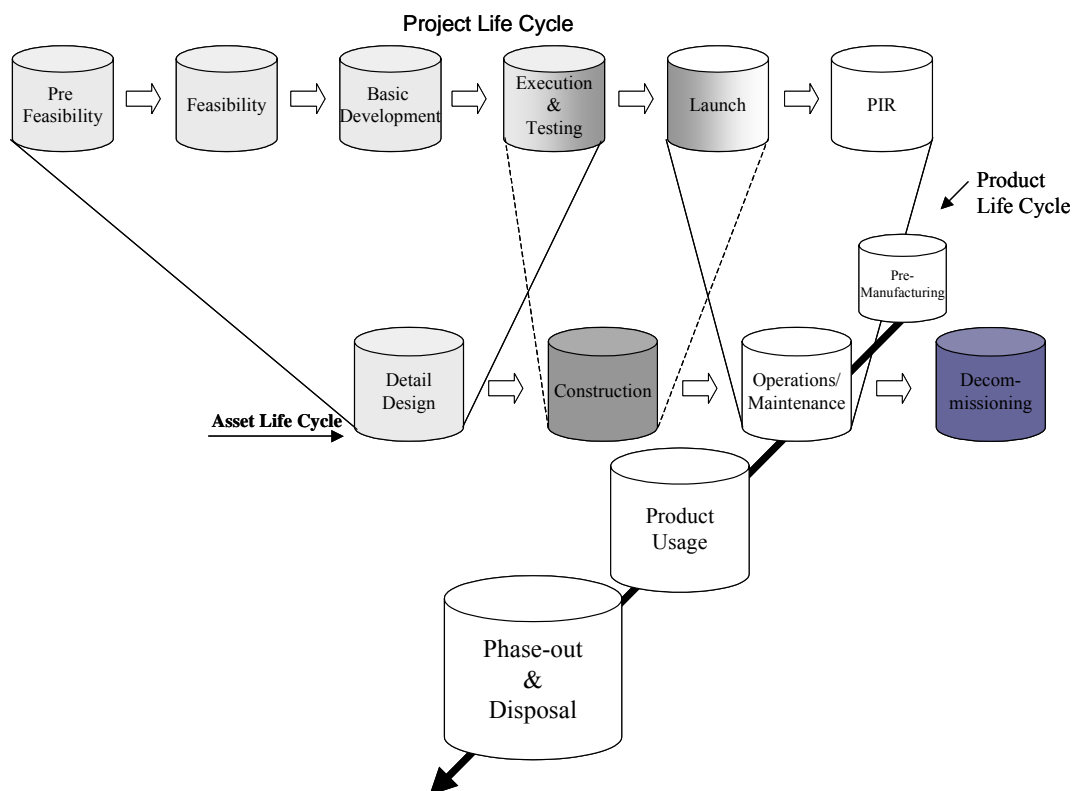


Figure 2-8: Interaction Between the Project, Asset and Product Life Cycles

3. Social Sustainability Framework³

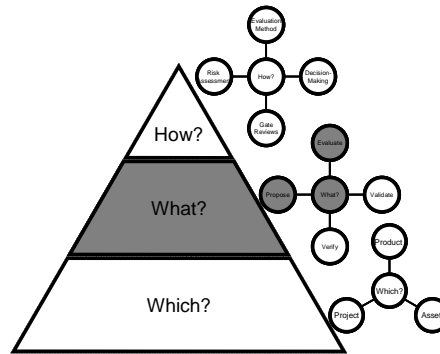
3.1 Introduction

The first main element of the proposed model to incorporate sustainable development in project management methodologies is a comprehensive sustainable development framework (see section

1.4.1). Since the publication of Agenda 21⁴ in 1992, numerous frameworks to measure or assess sustainable development have been developed. From a business sustainability perspective, these frameworks (see Appendix A and Table 1-1) have the following weaknesses:

- The focus is typically on a national, regional or community level. Not many frameworks therefore focus on business sustainability [137]. The European Union [21] supported this view when it stated that a framework to ensure that businesses integrate social considerations into their activities is needed.
- It lacks clear and detailed guidance for indicator use [138].
- Although the frameworks have a strong environmental focus, key social aspects are ignored [11, 138].
- Most frameworks are developed for internal management, which does not allow for external benchmarking [138]; and
- no universally accepted tool aimed at considering impacts across the three dimensions of sustainable development [139] has been introduced.

The review of existing frameworks of sustainable development (see section 1.1.1 and Appendix A) revealed that a sustainable development framework for application directly to projects to ensure alignment with sustainable development does not exist at present. A framework aimed at assessing or measuring a project's sustainability is therefore needed [89, 103, 110]. Although this thesis focuses only on the social dimension of sustainable development, the integrated nature of the three dimensions requires consideration of the other two dimensions when developing the social sustainability framework.



³ The framework was developed in co-operation with a Masters Student from the Technical University of Eindhoven. A joint publication of this research work appeared in the Journal of Cleaner Production in Vol. 13(4), 2005, pp.373-385.

⁴ Agenda 21 is an output document of the 1992 United Nations Conference on the Environment and Development held in Rio de Janeiro. It describes a blueprint or action plan for the implementation of sustainable development.

3.2 Prerequisites for the Framework

In order to propose a modified business sustainability framework applicable to projects, the following two questions need to be addressed firstly:

- Should a business sustainability framework include an institutional dimension? Thus, should business sustainability be measured in four dimensions, as per the United Nations' (UN) Commission on Sustainable Development (CSD) proposition to include the institutional dimension or in only three, i.e. the economic, environmental and social dimensions; and
- What is the relationship between Corporate Social Responsibility (CSR) and business sustainability and how should the relationship feature in a framework?

3.2.1 Institutional Sustainability and Business Strategy

Although Agenda 21 does not specifically refer to a fourth dimension, some institutional aspects and indicators cannot be classified under the other three dimensions [140]. The UN's CSD therefore introduced a fourth dimension of sustainability, namely Institutional Sustainability. It is thus believed that proposing institutional sustainability as a fourth dimension has been a prerequisite for the operationalisation of Agenda 21's demands [141]. The UN's CSD divided Institutional Sustainability into two themes, namely institutional framework with two indicators and institutional capacity with four indicators (see Table 3-1). The institutional sustainability dimension covers 6 chapters of Agenda 21 [39].

Table 3-1: Institutional Themes, Sub-Themes and Indicators of the UN's CSD [39]

Theme	Sub-Theme	Indicator
Institutional framework (38,39)*	Strategic implementation of sustainable development (8)	National sustainable development strategy
	International co-operation	Implementation of ratified global agreements
Institutional capacity (37)	Information access (40)	Number of Internet subscribers per 1000 inhabitants
	Communication infrastructure (40)	Main telephone lines per 1000 inhabitants
	Science and technology (35)	Expenditure on research and development as a percentage of Gross Domestic Product (GDP)
	Disaster preparedness and response	Economic and human loss due to natural disasters
* Numbers in brackets indicate the relevant chapters of Agenda 21 addressed by the theme or sub-theme.		

Chapter 8, which is considered as the core institutional chapter of Agenda 21 [140, 141], calls for, amongst others, integrating socio-economic and environmental aspects in decision-making as well as adopting a national sustainability strategy [142]. The contents of the six chapters in Agenda 21 focussing on institutional sustainability are summarised in Table 3-2.

Table 3-2: Analysis of Agenda 21 Chapters Relevant to Institutional Sustainability [142]

Chapter and Title	Programme Areas⁵ Defined
Chapter 8: Integrating Environment and Development in Decision-Making	a) Integrating environment and development at policy, planning and management levels b) Providing an effective legal and regulatory framework c) Using economic instruments, the market and other incentives effectively d) Establishing systems for integrated environmental and economic accounting
Chapter 35: Science for Sustainable Development	e) Strengthening the scientific basis for sustainable management f) Enhancing scientific understanding g) Improving long-term scientific assessment h) Building up scientific capacity and capability
Chapter 37: National Mechanisms and International Co-operation for Capacity-Building in Developing Countries	No specific programme areas defined.
Chapter 38: International Institutional Arrangements	No specific programme areas defined
Chapter 39: International Legal Instruments and Mechanisms	No specific programme areas defined
Chapter 40: Information for Decision-Making	a) Bridging the data gap b) Improving information availability

Both the UN's CSD approach [39] as well as the SERI-study into institutional sustainability [140, 141] indicates that businesses can only address the first theme of institutional sustainability, namely institutional framework, on a strategic level by:

- mentioning and incorporating sustainability principles within business strategies, i.e. vision, mission, business goals, etc., in line with national and international government's;
- openly acknowledging support for global agreements;
- including external sustainable development objectives in internal research and development; and
- allocating funding to address sustainability issues beyond the company's immediate control.

⁵ Programme areas defined in Agenda 21 are described in terms of the basis for action, objectives, activities and means of implementation and thus describe specific action steps to achieve the specific goal of the chapter for which it is defined.

Institutional sustainability's manifestation on a strategic level within a business or industry can therefore be seen as a prerequisite for sustainable operations, projects or even corporate sustainability. Since this chapter proposes a framework to assess project's sustainability, the first level of the proposed framework is thus referred to as the "Corporate Responsibility Strategy" (see Figure 3-1). It implies that a prerequisite for all sustainability is a strategy accepting the company's responsibility and vital role both in every society it operates in as well as in the global environment. Such a pro-active sustainability strategy is regarded as indispensable to set a definite course towards sustainable development objectives [143]. The board of directors should design the strategy and can include references to international agreements or actions that the company endorses. Projects' sustainability is therefore only evaluated in terms of the remaining three dimensions, i.e. social, environmental and economic. However, business should still address the second theme of institutional sustainability, namely institutional capacity, on an operational level. The framework also includes this theme (see section 3.4.2.4).

3.2.2 Corporate Social Investments and the Sustainability of Business Initiatives

The sustainable development assessment frameworks reviewed as well as the discussion of corporate social responsibility and business sustainability (see Appendix A and C) indicate that social sustainability entails far more than only Corporate Social Responsibility (CSR) projects or Corporate Social Investment (CSI) in communities. Although companies can have a large and positive effect on society through their CSI or CSR projects [144], core business activities have a bigger social impact than the company's philanthropic contributions can ever have [93]. The fact that development is by nature social [145] and that projects start core business activities, which are normally new developments, strengthens the above argument.

CSR projects and CSI contribute to a company's overall sustainability and should be evaluated as such [60]. Yet, although funded by profit generated from operational activities, it does not form part of a company's core business activities although the company's corporate responsibility strategy guides CSR projects and CSI. Nevertheless, a framework aimed at evaluating a project's sustainability should not take the company's CSR initiatives into consideration. However, any CSR project or CSI resulting directly from the project at operational level and sponsored by the project budget must be evaluated in terms of its social sustainability impact. For example, Sasol builds schools and drinking wells in Mozambique as part of its natural gas pipeline project [146]. To ensure a clear distinction between company CSR projects and CSI as well as project sustainability in the framework, Level 2 sub-divides company activities guided and influenced by Level 1 into the following two dimensions (see Figure 3-1):

- Societal Initiatives, i.e. CSR and CSI; and
- Operational Initiatives, i.e. projects and core business activities.

The operational initiatives' sustainability can be assessed in terms of the three dimensions of sustainability.

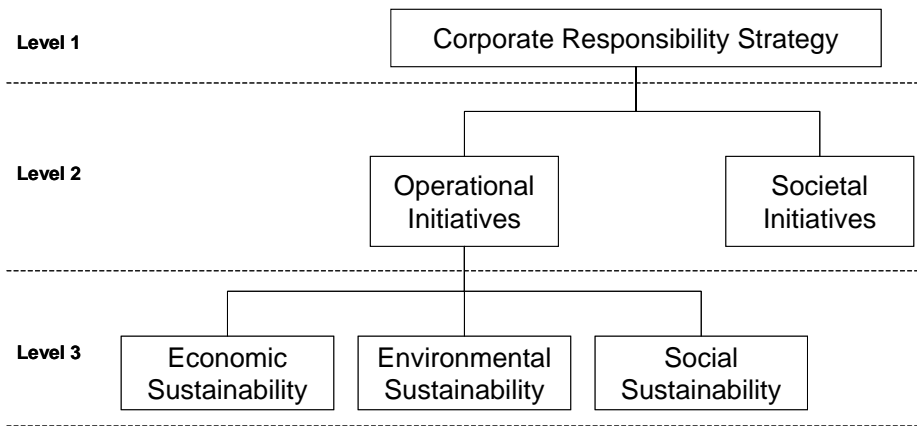


Figure 3-1: Level 1 to 3 of the Project Sustainability Assessment Framework

3.3 Economic and Environmental Dimensions

3.3.1 Economic Business Sustainability

The various frameworks reviewed fail to address economic sustainability in the same context. The Global Reporting Initiative (GRI) defines economic sustainability as concerning “*an organisation’s impacts on the economic circumstances of its stakeholders and on economic systems at the local, national and global levels*” [60]. The GRI is thus predominantly concerned with a business’s external impacts on economic systems. The UN, Wuppertal Institute and IChemE frameworks follow an internal focus regarding the economic dimension, i.e. the UN and Wuppertal frameworks consider a nation’s economic performance in terms of Gross National Product (GNP) or GDP per capita. It is therefore imperative to stipulate whether an internal or external focus is followed for the proposed framework’s economic dimension.

The Caux Round Table’s Principles for Business states that although survival on its own is not a sufficient goal, a business must at all times maintain its own economic health and viability [47]. Others agree with the Round Table in that the first step for businesses serious about social responsibility is to stay in business [30]. Henry Ford also realised the importance of sound finances by stating that “*if business concentrates on social goals at the sacrifice of short-term profit, it may find itself destroyed at its neglect of its long-term future*” (cited in [1]).

Companies’ survival in the long-term thus depend on their ability to be profitable. Unviable businesses can make no contribution to the economic systems on a local, national or global level [147]. Another argument indicates that a company’s first social responsibility is towards its owners and shareholders. This responsibility entails profits and a healthy economic situation [148, 149]

Internal operational initiatives directly contribute to a company's overall profitability. Furthermore, the proposed framework is aimed at assessing an operational initiative's economic sustainability, which will only contribute to sustainable development by ensuring the conditions for ongoing survival [150]. Therefore, the focus of framework's economic dimension is internal, while external economic contributions or burdens are allocated to social sustainability, i.e. as external socio-economic aspects.

The IChemE and UN approaches are used as a basis to define criteria relevant for this dimension. This dimension aims to evaluate the business short and long-term financial stability and survival capabilities. The following four criteria can be used for this purpose:

- Financial Health - the criterion entails those aspects assessing a company's internal financial stability and includes traditional measures, such as profitability, liquidity and solvency as sub-criteria;
- Economic Performance - the criterion assesses the company's value as perceived by shareholders, top management as well as government and includes sub-criteria, such as share profitability, contribution to gross domestic product and market share performance;
- Potential Financial Benefits - The criterion assesses financial benefits other than profits, e.g. national and/or international subsidies based on the environmental, social and/or technological improvements due to business initiatives; and
- Trading Opportunities: the criterion assesses the vulnerability of the company's trade network as well as the risks it is exposed to by the network it is embedded in by considering the number of national and/or international companies in the trade network.

The economic dimension will not be explored further in this research.

3.3.2 Environmental Business Sustainability

In the South African context, national government clearly indicated the important criteria within the environmental dimension [151]. Using national government's priorities as a guideline, criteria for assessing projects' environmental sustainability have been developed for the South African process industry [103]. These criteria are similar to those that have been proposed to evaluate Clean Development Mechanism (CDM) projects within South Africa [152] and to assess the overall impacts of life cycles systems in the South African context [153]. It has an external focus with four natural resource groups as main criteria. These criteria are:

- Air resources - the criterion assesses a company's contribution to regional air quality effects, e.g. toxicity, acidification, etc., as well as to global effects, such as global warming and stratospheric ozone depletion;
- Water resources - the criterion assesses the availability of clean and safe water by focusing on a company's impacts on the quantity and quality of water, i.e. water usage and release of water effluents and pollutants;

- Land resources - the criterion assesses a company's impacts on the quantity and quality of land resources, including sub-criteria of land-usage and transformation, with subsequent impacts on biodiversity, direct and indirect releases of soil pollutants, etc.; and
- Mineral and Energy resources - the criterion assesses a company's contribution to the depletion of non-renewable mineral and energy resources.

Although the possible causes and effects of industry activities on the natural state of the four resource groups have been well documented, it should be noted that there is, as yet, no consensus on a consistent methodology to measure these causes or effects. Many quantitative and qualitative methodologies have been proposed [11, 153, 154]. The strive towards consensus is highlighted in the ongoing work of the of the Life Cycle Impact Assessment (LCIA) workgroup of the United Nations Environmental Programme (UNEP) global life cycle initiative [132]. Environmental sustainability is nevertheless not the focus of the research, resulting in the criteria and associated indicators not being developed further.

3.4 Social Business Sustainability

Businesses are increasingly paying more attention to the social dimension of sustainable development, mainly due to an experienced shift in stakeholder pressures from environmental to social-related concerns [42, 155]. During the last decade of the 20th century, various significant steps were taken to draw the social dimension of sustainable development into the open [93]. However, including social aspects in both the sustainability debate and practice has been marginal compared to the focus on the other two dimensions, especially from a business perspective [93, 156, 157]. It is believed that the state of development of indicators or measurements for social business sustainability parallels that of environmental performance of approximately 20 years ago [158]. The social dimension is commonly recognised as the weakest pillar of sustainable development, given the lack of analytical and theoretical underpinnings [155]. This is mainly due to the problematic nature of social indicators and measurements, which is due to the following two principal reasons:

- social issues do not have any underpinning in an objective speciality, such as ecology; and
- social issues have a much higher cultural content, thus various perspectives can feature in one issue [159]

The question of whether a particular social issue is relevant to the company, i.e. should the company be concerned about it and does the concern justify company involvement, further complicates the business perspective [160]. Since the framework aims to evaluate operational initiatives' sustainability performances, the framework's social dimension is concerned with the company's impacts on the social systems in which it operates as well as the company's relationship with its various stakeholders.

3.4.1 Criteria for Social Business Sustainability

To define a sub-set of criteria for social business sustainability, the following sources were investigated:

- sustainable development frameworks (see Appendix A);
- international standards and guidelines (see Appendix A);
- corporate social responsibility models, standards and frameworks (see Appendix A);
- analysis of sustainable development reporting (see Appendix C); and
- pressure or expectations from international financing companies and specifically World Bank's Social Analysis Sourcebook [161] (see Appendix A).

In addition to these analyses, it was necessary to explore Social Impact Assessment (SIA) literature, guidelines and checklists. An extensive literature review concluded that not many social impact assessment questionnaires and checklists are available in the public domain. The following SIA and other social sources were studied:

- Inter-organisational Committee on Guidelines and Principles for SIA [162];
- Socio-economic impacts for Climate Change Mitigation [163];
- South Sydney Council: Social Impact Assessment Checklist [164];
- Social Impact Assessment Categories for Development Projects in South Africa [165];
- Social Impact Assessment Categories for CDM projects in South Africa [152];
- Classifications of social impacts according to Vanclay, Juslén, Gramling and Freudenburg [166]
- Social Impact Assessment Series' Guide to Social Assessment [167]; and
- Shell's Social Impact Assessment Manual – SIA EP 95-0371 [168].

Analysis of the literature was started by scrutinising the shareholders addressed by the specific source. Secondly, the individual aspects regarding the different stakeholders were analysed. The analysis indicated that the literature addresses company internal aspects, external aspects related to the society as well as aspects stressing the link between society and the company. Table 3-3 presents a summary of social criteria addressed by the various literature sources.

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 3

Table 3-3: Analysis of Social Criteria Addressed by Various Literature Sources

NAME & TYPE OF LITERATURE	CRITERIA																	
	Society										Society & Company (Interlinkage)			Company Internal				
	Health	Education	Environment	Housing/ Living Conditions	Security/ Crime	Facilities & Services	Population Characteristics	Community Characteristics	Economic Welfare/ Employment	Community Cohesion	Product Responsibility	Community Involvement of Company	Stakeholder Participation/ Engagement	Training and Education of Staff	Equity	Fair Labour Practices	Human Rights	Employee Health & Safety
INDICATOR FRAMEWORKS																		
United Nations	X	X		X	X	X	X		X					X				
Global Reporting Initiative	X			X	X	X	X			X			X	X	X	X	X	X
IChemE Sustainable Metrics							X		X					X	X			X
Wuppertal Indicators	X	X	X	X		X								X				
European Conceptual Framework for Social Indicators	X	X	X	X	X	X	X		X	X								
GOVERNMENT ACTIONS																		
European Greenpaper on CSR	X	X		X	X	X	X		X		X			X	X	X	X	X
SIA LITERATURE																		
Interorganizational Committee on Guidelines and Principles for SIA	X		X	X	X	X	X		X	X			X		X			
Socioeconomic impact for Energy-Efficiency Projects for Climate Change Mitigation	X	X		X	X		X		X	X			X	X	X			
South Sydney Council: Social Impact Assessment Checklist	X	X		X	X	X	X		X	X			X					
Social Impact Assessment Categories for Development Projects in South Africa	X	X		X	X	X	X		X	X			X	X	X			
South Africa Social Criteria for CDM Project Evaluation						X			X				X	X	X			
Classification of Social Impacts according to Vancloy	X	X	X	X	X	X	X		X	X				X	X			
Classification of Social Impacts according to Juslén	X		X	X	X	X	X		X	X								
Classification of Social Impacts according to Gramling and Freudenburg	X	X	X	X	X	X	X		X	X				X				
Social Impact Assessment Series' Guide to Social Assessment	X				X	X	X		X	X								X
SIA EP 98-0371	X			X	X	X	X		X	X								
PRESSURE FROM INTERNATIONAL FINANCING ORGANISATIONS																		
World Bank's Social Analysis Sourcebook							X		X		X			X		X		
SRI INDEXES																		
Dow Jones Sustainability Index									X		X		X	X	X	X	X	X
FTSE 4 Good									X		X		X	X	X	X	X	X
JSE SRI Index									X		X		X	X	X	X	X	X
Dominini 400 Index		X	X	X					X		X		X	X	X	X	X	X
INTERNATIONAL STANDARDS & GUIDELINES																		
Global Compact												X		X	X	X	X	X
Global Sullivan Principles												X	X	X	X	X	X	X
Canon Round Table												X	X	X	X	X	X	X
OECD Guidelines												X	X	X	X	X	X	X
SA 8000										X			X	X	X	X	X	X
AA 1000										X			X	X	X	X	X	X
Investors in People										X		X	X	X	X	X	X	X
Ethical Trading Initiative										X			X	X	X	X	X	X
CSR STANDARDS																		
Ethos Indicators			X			X			X		X		X	X	X	X	X	X
Standards of CSR									X			X	X	X	X	X	X	X
Danish Social Index									X			X	X	X	X	X	X	X
SUSTAINABLE DEVELOPMENT REPORTS																		
BP														X				X
DOW													X	X				X
Shell						X							X	X	X			X
Anglo American									X				X	X	X			X
Bilim									X				X	X	X			X
BRASOL													X	X	X			X
Bayer													X					X

It is evident that business social sustainability can be viewed from various perspectives and it is possible to distinguish between a definite internal and external focus. These two distinct perspectives are in line with the fact that stakeholders exist within and outside the company [169] and that business social sustainability should investigate the impacts that the business has on all social systems and thus all stakeholders. Business has a social responsibility on three levels as a function of its role as:

- employer;
- leading “citizen” in the community of operation; and
- good and concerned citizen of the country of operation [170].

Business can therefore have a distinct social impact on three levels, namely internally, regionally and nationally. Three main criteria of social business sustainability are consequently dedicated to account for these impacts. These criteria are Internal Human Resources (IHR), External Population and Macro Social Performance.

The second conclusion based on the analysis is that communication and interaction with stakeholders play a vital role in social sustainability. Stakeholders have been defined as one of the five key corporate sustainability performance principles [71]. Stakeholder participation is also a social sustainability criterion within most of the frameworks or guidelines developed with a business perspective, e.g. GRI, IChemE and the Dow Jones Sustainability Group Index. Stakeholder Participation is thus chosen as the fourth main criteria of business social sustainability.

The four main social criteria lie on Level 4 of the proposed sustainability assessment framework (see Figure 3-2). The following sections focus on the social criteria on Levels 4 to 6 of the framework, by discussing the criteria and South African scenarios relevant to the criteria. South African specific scenarios are mentioned as the focus of the research is primarily on the South African process industry. The criteria and sub-criteria have been developed by categorising social aspects identified in the literature analysis.

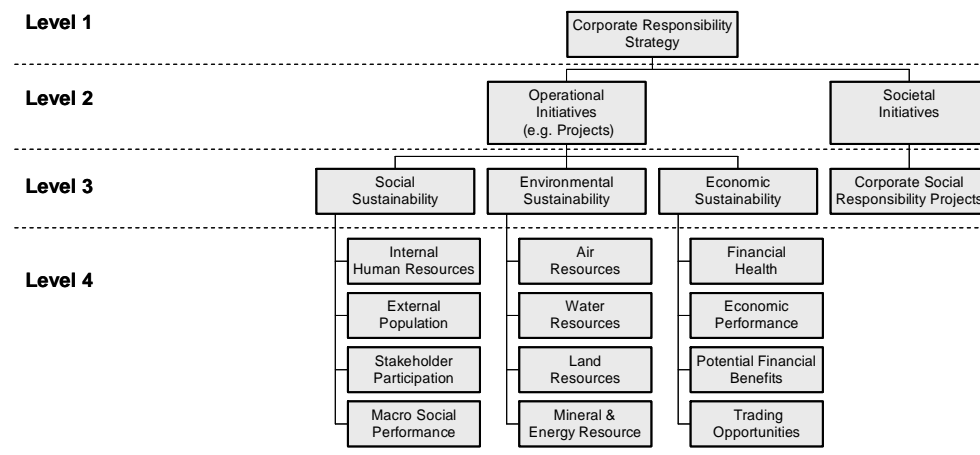


Figure 3-2: Level 1 to 4 of the Proposed Sustainability Assessment Framework

3.4.2 Internal Human Resources

"My only two passions are employees and customers. Because if I don't look after my employees, they won't look after my customers"

- John Chambers, President Cisco Systems (as cited in [171])

During the industrial revolution, workers were viewed purely as production units. Such little consideration was given to their social needs that the "disease" of society at that time was viewed as "the ill paid or unemployed worker" [172]. Some even believed that had businesses since the industrial revolution treated all employees with the respect and concern human beings deserve, CSR would not be an issue today (Rantla as cited in [4]).

The criterion "Internal Human Resources" thus focuses on the company's social responsibility towards its workforce and includes all aspects of employment. The internal aspects of social sustainability, excluding internal stakeholder relationship management, are grouped under this criterion. However, social responsibility towards employees goes beyond employee benefits and entails understanding the employees' living circumstances [30].

In 1997, the social contract between management and employees became a topic of national political debate in the USA, mainly because of the economic transformation taking place [33]. It was realised that both specific legislative remedies as well as innovative corporate investment in employee well-being were needed to address the problems. Based on the three policies or strategies developed to guide the debate, the criterion should address at least:

- health care and pension benefits;
- employee education, retraining and family assistance; and
- compensation [33].

The criterion has to be guided by the International Labour Standards and other international standards and guidelines developed with a specific company internal focus e.g. SA 8000, which aims to improve working conditions globally (see Appendix A). The criterion is also strongly influenced by the Standards of Corporate Social Responsibility (see Appendix A), which states that:

- employees should be regarded as valued partners in the business;
- their rights to fair labour practices, competitive wages and benefits as well as a safe, harassment free, family friendly work environment should be respected; and
- personal and professional employee development as well as empowerment and diversity at all levels should be promoted through good human resource management practices [66].

The following three approaches were identified to manage employees [173]:

- immoral management - employees are viewed as factors of production to be used, exploited and manipulated for gain of the individual manager or company;

- amoral management - employees are treated according to the law, thus they are still seen as factors of production, but a remunerative approach is followed; and
- moral management - employees are viewed as human resources to be treated with dignity and respect.

The criterion's aim is to evaluate which approach the company is following. Since employees are the most important human capital a company has and are often also referred to as organisational social capital [174], moral management is an important goal to aim for. In addition, attracting and retaining skilled employees are a major challenge faced by companies today [21]. Internal Human Resources is therefore definitely an important criterion to consider when discussing business sustainability. Many companies recently started realising that looking after its employees is not only altruistic, but can also generate financial benefits [87].

The criterion can be divided into four sub-criteria, which will address the main issues of concern, namely Employment Stability, Employment Practices, Health and Safety as well as Capacity Development.

3.4.2.1 Employment Stability

The criterion addresses a business initiative's impact on work opportunities within the company, the stability thereof as well as evaluating the fairness of compensation. Business's first social responsibility is often viewed as staying in business to offer job security [30]. Job security can only be offered when employment stability is evident within the company. The criterion can be analysed in greater detail by looking at the following two sub-criteria:

- **Employment Opportunities**

This criterion groups together all indicators dealing with changes in the number of employees as well as those indicators describing the nature of the workforce in terms of the employment contracts. The type of employment opportunities together with the consistency in the number thereof are important indicators of how secure employees' jobs are. The February 2002 Labour Force Survey revealed that South Africa had 11.4 million employment opportunities [175] with at least 1,253,723 of these opportunities in the South African manufacturing industry.

- **Employment Remuneration**

This criterion refers to the payment of employees for work delivered or executed. It includes the monetary amount paid as well as additional benefits that employees receive as part of their salary packages. Most countries prescribe an allowable minimum monetary amount to be paid to employees for work performed (see Appendix E). South Africa has no national minimum wage. Instead, minimum wages are determined through two separate institutions. Sectoral bargaining councils set minimum wages at an industry level through a collective bargaining process. The second institutional mechanism, which applies to areas not covered by bargaining councils, is the

Employment Conditions Commission, formerly the Wage Board [176]. The commission makes "sectoral wage determinations" for certain industries defined in the Basic Conditions of Employment Act of 1997 [177]. These minimum wages are defined per industry sector as well as per geographical area.

Companies exploiting workers through low wages have received increased media attention over the last twenty years. The latest "attack", which focused on the computer industry, is a good example. It is alleged that workers manufacturing hard drives for Dell in Thailand receives approximately £2.50 per day for their work, which is £133 997.50 less than what Dell's chief executive receives for a day's work [178]. This criterion can thus also threaten a company's public image.

3.4.2.2 Employment Practices

Employees are the organisational social capital and are supported and managed through employment practices [174]. Employment practices refer to the way in which the organisation treat and engage with employees and are based on the following three important aspects:

- stable relationships;
- strong norms; and
- specified roles [174].

Nevertheless, employment practices should comply with the specific country's laws, international human rights declarations as well as other human rights and fair employment practice standards. The International Labour Organisation (ILO) was created in 1919 primarily for adopting international standards to cope with the problem of labour conditions [179]. The ILO's constitution requires organisations to:

- encourage the improvement of the workers' conditions;
- discourage certain countries from failing to adopt humane conditions of labour;
- promote the principle that labour should not be regarded as a mere "commodity or article of commerce"; and
- support the view that the price of labour should be determined by human need and that all employees are entitled to a reasonable standard of living [2].

The ILO focuses strongly on human rights and has eight fundamental conventions that all companies should be aware of. The eight conventions are concerned with the following four aspects:

- freedom of association;
- the abolition of forced labour;
- equality; and
- the elimination of child labour [180].

Sub-standard employment practices can result in the company suffering financial losses. In 1997, 28 United States of America (USA) States and 13 other countries participated in a day of protest against sports good manufacturer NIKE's employment practices. A leaked internal report informed the public of a plant in Vietnam with low wages and excessive working hours. It is believed that the protest actions, followed by a "boycott Nike" campaign, resulted in a drop in sales volumes [25]

This criterion is divided into four sub-criteria. Two sub-criteria evaluate internal practices and employee rights while the other two deals specifically with the ILO's fundamental conventions. These four criteria are:

- **Disciplinary and Security Practices**

This criterion focuses on the company's disciplinary procedures as well as the use of security personnel. These practices should not violate any of the employees' human or other rights.

- **Employee Contracts**

This criterion is concerned with the agreement between the employer and the employee. This agreement should not violate any of the employee's rights and should ensure fair treatment of the employee under all circumstances. In the South African context, chapter 4, section 29 of the Basic Conditions of Employment Act of 1997 states the basic elements and conditions for an employee contract. This contract should be in a language that the employee understands. The criterion aims to evaluate whether the company's employee contracts comply with all these standards as well as whether the elements of these contracts comply with the employee's rights. Freedom of association, which is an example of an employee right and one of the ILO's fundamental standards, can be guaranteed in the employee contract.

- **Equity and Diversity**

The criterion consists of the following two aspects:

- equity, which means fairness in actions and the treatment of others; and
- diversity, which means a variety of a specific aspect, such as an opinion, gender, colour or style.

In the business environment, the criterion's diversity aspect is concerned with the composition of staff regarding gender, race and cultural heritage. The criterion's equity aspects will determine whether all people are treated justly, fairly and impartially. Two of the eight fundamental ILO conventions are relevant to this criterion. They are:

- Discrimination (Employment and Occupation) Convention Number 111 of 1958; and
- Equal Remuneration Convention Number 100 of 1951 [180].

In South Africa, laws (e.g. Employment Equity Act of 1998) forces companies to ensure that their workforce complies with certain diversity percentages.

- **Labour Sources**

This criterion focuses on what sources of labour the company employ. The importance of this criterion is evident from the fact that four of the eight fundamental ILO conventions deal with

labour sourcing, two with forced labour and the other two with child labour. These four conventions are:

- o Forced Labour Convention Number 29 of 1930;
- o Abolition of Forced Labour Convention Number 105 of 1957;
- o Minimum Age Convention Number 138 of 1973; and
- o Worst Forms of Child Labour Convention Number 182 of 1999 [180].

The criterion is thus divided into two sub-criteria, namely forced labour and child labour. It is estimated that there are currently more than 250 million children worldwide in the employment market [25]. In the South African context, child labour was defined in 1998 as “*work by children under 18 which is exploitative, hazardous or otherwise inappropriate, for their age, detrimental to their schooling, or social, physical, mental, spiritual or moral development. The term ‘work’ is not limited to work for gain but includes chores or household activities in the household of the child’s care-giver where such work falls within the definition of child labour set out in the paragraph above. Appropriate activities related to skills training are not seen as child labour*” [181]. The definition is based on ILO standards and distinguishes between economic and non-economic activities. Statistics on child labour indicate in the 2000 survey on young people’s activities in South Africa that 25.1% are involved in an economic activity for pay, profit or family gain [182]. Statistics on forced labour is by definition difficult to collect. The ILO does not use forced labour indicators as key labour market indicators. Statistics regarding forced labour is therefore seldom collected or available [183]. Nevertheless, forced labour remains an issue that can harm any company’s reputation.

3.4.2.3 Health and Safety

This criterion focuses on employees’ health and safety and evaluates preventive measures, i.e. Health and Safety Practices, as well as the occurrence and handling of Health and/or Safety Incidents as sub-criteria. Governments, businesses and professional bodies are intensifying their focus on employees’ health and safety, resulting in occupational health and safety becoming a rapidly expanding facet of employees’ working day [184]. Another way for governments and businesses to promote health and safety is to use it as a criterion in procurement contracts. The criterion is therefore often also used for marketing purposes to promote a certain product or service [21]. Managing occupational health and safety effectively has certain distinct benefits for business. There are, however, also a number of risks for businesses failing to adhere to this important criterion which Table 3-4 shows.

A study by the British Health and Safety Commission published a set of 19 case studies, indicating the business benefits of improved health and safety practices. One case study showed savings of £11 million through reduced sickness absence, while other case studies showed improved productivity and public image as well as savings in health insurance amounting to £200 000 per annum [185]. The commission is planning to launch a health and safety performance index aimed at assess the health and safety performance of United Kingdom (UK) companies with more than 250 employees [185].

Managing health and safety within a company cannot be viewed in isolation from managing the business as a whole. This criterion as well as its related sub-criteria is therefore essential in determining business sustainability performance.

Table 3-4: Benefits and Risks due to the Nature of Health and Safety Management [2]

Benefits of Effective Health and Safety Management	Risks of Ineffective Health and Safety Management
<ul style="list-style-type: none"> • Positive contribution to a culture of shared responsibility • Maintenance of a caring reputation • Preservation of individual health • Enhancement of general well-being and morale • Contribution to continuous improvement of efficiency, productivity and business success 	<ul style="list-style-type: none"> • Increased insurance costs • Fatal and serious injuries to employees, contractors and clients incurring serious liabilities • Negative impact on morale, stakeholder loyalty and commitment • Prosecution and imprisonment • Loss of reputation • Temporary or permanent closure of business activities

The criterion is divided into the following two sub-criteria:

- **Health and Safety Practices**

This criterion assesses all the company’s precautionary procedures and practices to ensure preparedness for possible health and safety incidents. The criterion also considers whether the company self-assesses or audits its preventative actions and whether employees are exposed to health and safety training. In South Africa all health and safety practices should be aligned with the Occupational Health and Safety Act of 1993.

- **Health and Safety Incidents**

This criterion assesses actual incidents and analyses these according to seriousness and compensation. Health and safety incidents can have negative impacts on the business’s reputation and the liabilities resulting from such an incident are continuous, even if the original company is sold. An example is the Dow Chemicals Group, which inherited Union Carbide’s Bhopal disaster when they bought Union Carbide in 2001. The Bhopal disaster⁶ occurred in 1984. Union Carbide paid 470 million US Dollars in compensation to the government of India and donated a further 90 million US dollars to build a hospital to treat the victims [186]. The Dow Chemicals Group believed that they did not inherit any responsibilities or liabilities when acquiring Union Carbide [255]. In November 2003, the Brethren Benefit Trust, Inc., which owns 9,158 shares of Dow

⁶ In 1984 there was a gas disaster at Union Carbide’s plant in Bhopal. To date, the disaster claimed more than 20,000 lives and left 150,000 people chronically ill (International Campaign for Justice as cited in [186]).

stock valued at 330,000 US Dollars, filed a shareholders resolution calling on Dow to prepare a report describing the initiatives taken to address the specific health, environmental and social concerns of the Bhopal disaster [186]. Health and safety incidents can thus definitely threaten long-term business sustainability.

3.4.2.4 Capacity Development

A business can only be sustainable over the long-term if the necessary technology and adequate human resources are available to support the business goals. To be sustainable, businesses therefore need to develop capacity in human capital, i.e. employees, and technological capital, i.e. sustainable technology through innovation. Capacity Development addresses the following two different aspects:

- **Research and Development**

This criterion evaluates the company's contribution to sustainable product development through its research and development programmes as well as its innovativeness. This criterion aims to assess whether the business' research and development activities contribute to its long-term sustainability and to sustainable development in general.

- **Career Development**

Career development focuses on training employees as well as providing career guidance and higher-education opportunities. A company offering career development opportunities has a definite advantage when it comes to attracting and retaining skilled employees [33]. The criterion therefore looks specifically at training opportunities, employment development processes, appraisal and promotion procedures as well as the level of knowledge within the company. In South Africa, the Skills Development Act of 1998 aims to develop the skills of employees by encouraging employers to use the workplace as an active learning environment.

3.4.3 External Population

Companies' social accountability or responsibility has been defined as "*a commitment to be co-responsible for the quality of life within the community from which the company draws its resources and gets its support*" [4]. Social business sustainability should thus also include this aspect of corporate responsibility. The External Population criterion focuses on the impact of the company's operations on the community in which it operates, i.e. communities within the close vicinity of any of the company's operations, also referred to as the local community. The external dimension of social sustainability is divided into External Population and Macro Social Performance.

The following three approaches to manage the company's relationship with the local community can be distinguished [173]:

- immoral management - this approach will exploit the community to the fullest extent and will tolerate environmental pollution;

- amoral management - in this approach, managers consider community factors as irrelevant to business decisions. The community and its resources are not taken into account in management decision-making. The company complies with legal regulations, but community involvement is minimal; and
- moral management - the company aims to be a leading, responsible citizen of the community and are actively involved with community activities. Community and company goals are seen as mutually interdependent.

The local community should be of the utmost importance to any company, since companies depend on the health, stability and prosperity of the communities in which they operate [21]. Barbara Hayes states that “*The community is the basis of all economic activity, with no community there is no company*” (cited in [12]). This criterion thus recognises the fact that businesses do not and cannot operate in a vacuum [187], but are integrated with the whole of society’s problems, structure and future [69]. Businesses should therefore practice a moral management approach regarding the external community.

Wheeler and Silanpää [2] adopted Tom Cannon’s matrix of enlightenment to explain a company’s options for engagement in civil society. The axes of the matrix refer to the company interests and the type of philanthropic behaviour (see Figure 3-3).

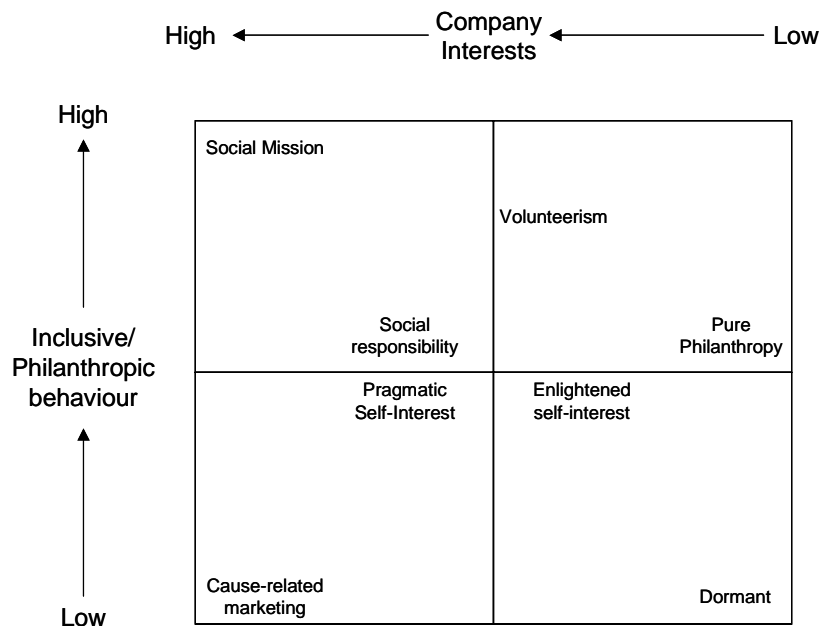


Figure 3-3: Matrix of Enlightenment for Engagement in Civil Society [2]

Based on this matrix, eight groups of typical company engagement have been identified and are shown in the figure. These are:

- social mission - this group includes companies whose mission is intimately linked with the company's philanthropic nature. Companies in this group are characterised by a strong ethic system, which can be based in religious or social beliefs;
- "pure" philanthropy - companies in this group bequeaths money to foundations or institutions without any direct requirement for publicity or control over how the contribution will be spent;
- social responsibility - this group consist of all companies that combine moderate-high levels of philanthropic behaviour with a clear recognition of the need to behave accountable. Companies in this group realised the benefits of community involvement in the form of customer loyalty and reputation;
- enlightened self-interest - this group only differs from the previous group in the degree to which the companies have realised the benefits of moderate philanthropic behaviour in terms of business reputation and corporate legitimacy;
- pragmatic self-interest - this group includes companies that reoriented their philanthropic behaviour to reflect a broader view of self-interest to ensure alignment with corporate citizenship;
- cause-related marketing - companies using corporate social responsibility activities, such as sponsorships, for corporate reputation, sales promotion or image marketing instead of for pure philanthropic reasons fall within this group. This includes examples such as Proctor and Gamble's contribution to Keep America Beautiful and Boots' link between its sponsorship of cancer research and its sun care products;
- volunteerism - companies that are not on a real social mission but have moved beyond the point of pure philanthropy; and
- dormant - companies that do nothing.

A company with a moral management approach regarding external community engagement will most probably position itself somewhere between enlightened self-interest and social responsibility or might even consider a position closer to the social mission group.

Social Venture Networks [66] defined the following functions for a company in its external community:

- the company should foster an open relationship with the external community;
- the company should be sensitive to the community's culture and needs; and
- the company should play a pro-active, co-operative and collaborative role in making the community a better place to live and conduct business in.

External Population is divided into three sub-criteria dealing with the various forms of capital within the local community, namely Human Capital, Productive Capital and Community Capital. This approach is based on the fundamental principle that the well-being of any social environment, i.e. the external community, depends mainly on the sustainability of the assets that enable livelihoods [188].

Environmental capital is excluded, as it is addressed under business environmental sustainability (see section 3.3.2).

3.4.3.1 Human Capital

Human Capital refers to an individual's ability to work in order to generate an income and encompasses aspects such as health, psychological well-being, education, training and skills levels as well as employment opportunities [189]. The criterion addresses only two aspects thereof, namely Health and Education. Employment opportunities are not addressed as part of Human Capital, as the company's contribution in this regard is addressed under the Internal Human Resources criterion. The community's economic climate is addressed as part of Community Capital. The above agrees with Moser's definition of human capital as "*health status, which determines people's capacity to work, and skills and education, which determine the return to their labour*" [188]. The two sub-criteria are thus:

- **Health**

From a company perspective, the criterion Health focuses on the additional strain or beneficiation of a company's activities on local medical facilities. However, the indicators found in literature focuses only on the external community's health characteristics (see Appendix I). The external community's health often leans itself to CSI. Most companies' CSI budgets dedicate an amount to health projects [255, 258]. During the last decade, numerous companies have been involved specifically in health related projects dealing with the HIV/AIDS pandemic. This pandemic is a bottom-line issue for virtually any company operating in Africa, as it results in increased operational costs, e.g. additional recruitment and training costs, and a drop in productivity [190]. Especially South African companies are actively involved in fighting HIV/AIDS. The HIV/AIDS projects of both BMW South Africa [25] and Eskom [42] have been discussed in international publications as examples of good CSI projects.

- **Education**

Education is another area that CSI projects often contribute to [191]. Companies are, however, not solely involved in educating children. During the apartheid era, BP trained members of the African National Congress (ANC) in business and management practices in countries outside South Africa [192]. Education is also regarded as one of the most basic challenges facing South Africa [193]. The criterion's aim is to consider the following impacts of a company:

- impact on education facilities due to the operational activities;
- impact of possible training opportunities; and
- impact on the community's level of education through information sharing by the company.

3.4.3.2 Productive Capital

Productive Capital entails the assets and infrastructure an individual needs to maintain a productive life [189]. The criterion aims to assess the strain placed on these assets and infrastructure availability by the operational initiative's existence. The criterion is broken down into the following four sub-criteria:

- **Housing**

Housing is regarded as the most important asset contributing to overall productive capital. Housing is also one of the basic needs that must be satisfied to ensure an individual's productivity within the labour market [188]. The criterion aims to determine the impact of the business on the availability and quality of housing within the external community. Business has an additional influence on this criterion through its CSI projects and corporate housing actions, which can form part of the payroll responsibility, i.e. housing can be an additional benefit (see section 3.4.2.1). In South Africa specifically, the government's housing policy is based on the premise of partnerships between the strength of the nation, the strength of the private sector and the strength of the government [194]. A successful housing policy within a company is not only viewed as a primary social responsibility towards employees but also an important company asset [195]. A case study within the South African context found that a large business initiative, e.g. a chemical facility, can result in a rise in house prices within the local community [196]. Business' influence on this criterion can thus not be ignored.

- **Service Infrastructure**

Service infrastructure addresses basic services that individuals need to provide an adequate infrastructure that support life. The main services needed are:

- access to clean and safe water;
- electricity supply;
- sewage services; and
- waste services.

The criterion aims to determine operational activities' impact on these services. Businesses definitely have an impact on these services. In Plachimada, in the southern Indian state of Kerala, a local community took the soft drink company Coca Cola to court regarding the use of groundwater, which feeds the local wells, in their production process. Coca Cola using the water lead to water shortages and environmental contamination [197]. In December 2003, a court ruling ordered the Coca Cola bottling plant in Plachimada to cease using the local groundwater, since it was "*property held in trust*" [198]. Business activities' impact on the service infrastructure can thus result in negative publicity for a company, which can be a threat to the company's long-term sustainability.

- **Mobility Infrastructure**

Mobility Infrastructure considers public transport and transport networks, e.g. public roads. With regards to public transport, it assesses the quantity of options, availability of services, quality of services as well as the burden on the available infrastructure system. The criterion also assesses the quality of the transport networks and the burden it can carry. The criterion aims to determine

the additional burden company's operational activities place on the public transport system as well as on the external community's transport network.

- **Regulatory and Public Services**

Regulatory and Public Services studies the availability of public services, such as libraries, swimming pools, etc., and also looks at the political set-up within an external community. The company's impact on the availability of public services as well as the company's impact on the local political scene should be assessed, e.g. companies can make contributions to political parties, etc.

3.4.3.3 Community Capital

The community can be described as the mirror reflecting the company's personality back upon itself and therefore determining the employees within the company's attitude [199]. This criterion takes into account the effect of business activities on the social and institutional relationships and networks of trust, reciprocity and support as well as the community's typical characteristics. The evaluation of performance in the area of Community Capital is extremely important in evaluating a project's social sustainability, as it has been implied that the core of sustainability is "*how people feel about their surroundings and their way of life*" [169]. These perceptions can directly influence stakeholder participation initiatives and the business's licences to exist, operate and sell.

The following six groups are addressed separately:

- Sensory Stimuli, i.e. aesthetics, noise and odour levels;
- Cultural Properties;
- Social Pathologies, induced or increased;
- Security, induced or increased crime;
- Economic Welfare, induced business opportunities, impacts on poverty; and
- Social Cohesion, networks, demographics and equity aspects.

However, defining the community's exact boundaries is difficult and complex [200]. The community is potentially made up of various stakeholder groups, e.g. employees, trade unions, customers, pressure groups and the environment, and is not just a sum of these groups. It is also notoriously difficult to aggregate communal interests (Phillips and Reinhardt as cited in [200]). The six sub-criteria are discussed below:

- **Sensory Stimuli**

Sensory Stimuli looks at typical community characteristics regarding noise, odour and aesthetics. Operational activities' impact on these characteristics should be assessed.

- **Cultural Properties**

Impact on cultural properties can result in the loss of unique and valuable knowledge, skills or perspectives and should thus definitely be assessed. Cultural impacts are often assessed spatially through cultural significant sites, such as sacred groves, wells, springs, holy sites, old battlefields and buildings [201]. Business activities' impact on any cultural properties is significant and should thus be assessed. One example is the Trans Alaska pipeline project, where seven native villages, i.e. indigenous Alaskan groups, instituted a lawsuit against the project after withdrawing signed waivers which would have allowed the pipeline to run through their property. The indigenous groups claimed to withdraw the waivers because promises of jobs for the community were not honoured [202]. The passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971 destroyed the basis of large-scale indigenous opposition [203]. More than 30 years later, some still view the ANCSA as "*a tool to divide and exploit the Indigenous People, their traditional lands, and resources*" [204, 205].

- **Security**

Security looks at the community's security characteristics. It therefore considers crime and safety within the community. This criterion also aims to assess the impact of the business activities on security within the community, i.e. business activities can result in an inflow of people and therefore a rise in crime. The impact can thus be indirect.

- **Economic Welfare**

Economic Welfare considers the economic climate within the community as well as the community's economic characteristics. The criterion aims to determine the impact of a company on the economic climate and welfare within the external community.

- **Social Pathologies**

Social Pathologies are defined as social conditions deviating from the norm. This can include certain diseases occurring. Other examples include alcoholism, domestic violence, suicides, etc. Operational activities at a certain location can indirectly result in an increase in social pathologies. The inflow of numerous construction workers can lead to an increase in prostitution, which, in turn, can result in an increase in HIV/AIDS infections in the region.

- **Social Cohesion**

Social Cohesion or community cohesion refers to "*the degree to which residents have a sense of belonging to their neighbourhood or community*" [206]. The following characteristics of a community with a strong presence of social cohesion have been identified:

- frequent social interaction;
- use of community facilities and services;
- local participation and involvement in social activities;
- undefined sense of solidarity;
- presence of recognised community leaders;
- residential stability;

- o family orientation;
- o active elderly population;
- o defined community or neighbourhood organisations; and
- o area name identification [206].

Social cohesion can result in social capital, i.e. the value gained from being part of a community or social group [189]. Operational activities' impact on a community's social cohesion must be assessed.

3.4.4 Macro Social Performance

The Macro Social Performance criterion focuses on the company's impact on the external population on a regional and/or national level. The impacts on the economic systems of the region or nation, and therefore the external economic sustainability focus, are addressed under this criterion, as the proposed framework's economic dimension only addresses internal aspects.

Since corporate social performance is often interpreted to encompass both environmental and financial performance [158], Macro Social Performance is subdivided into two sub-criteria, namely Socio-Economic Performance and Socio-Environmental Performance.

3.4.4.1 Socio-Economic Performance

This criterion addresses the external economic impacts of the company's operational initiatives on a spatial scale larger than just the local community in which it operates. The main criterion assesses the following two aspects of the economic impacts separately:

- impacts on the economic welfare of the region or nation, e.g. contribution to GDP or taxes paid; and
- impact on trading opportunities, i.e. contribution to foreign currency savings, etc.

The two sub-criteria are thus:

- **Economic Welfare**

This criterion assesses the company's contribution to the economic welfare of the region or nation. The criterion only assesses all direct economic benefits flowing from operational initiative.

- **Trading Opportunities**

Companies can also influence the economic climate and opportunities within a region or country. Any impacts on the local community are accounted for in the external population criterion as well as its sub-criteria. Trading opportunities assesses the contribution, either positive or negative, made by the company to the economy. This criterion differs from the previous criterion, as it

assesses indirect benefits or costs that the company's operations cause on a regional or national level.

3.4.4.2 Socio Environmental Performance

This criterion considers operational initiative's contributions to improving a society's environment on a community, regional and national level. The criterion focuses on three aspects of environmental management, namely:

- **Monitoring**

The sub-criterion considers all the company's initiatives that aims to extend or improve society's environmental monitoring abilities. In South Africa's Mpumalanga province, two companies, Eskom and Sasol, conduct air quality monitoring networks aimed at monitoring various pollutants. One of these networks has been operational since 1980. The Mpumalanga authorities uses the data to address air quality problems within the region [207]. Companies can also participate in initiatives with government aimed at sharing best practices and monitoring information to strive towards continual improvement in environmental management. In South Africa, the following initiatives exist:

- Mpumalanga's Air Pollution Liaison Committee of the Mpumalanga province (APOLCOM) - the committee comprises of representatives of industry and the government, while the public and press are invited to all meetings. The Provincial Chief Air Pollution Control Officer (CAPCO) chairs these meetings [207, 208]. For each participant, a figure of merit is determined, based on actual performance. These are assessed annually. The committee also presents certain awards annually, e.g. an award for the most improved operation [209]; and
- North-West Air Pollution Control Forum (NAPCOF) -the committee comprises of members of industry as well as the provincial CAPCO and aims for continuous improvement in air emission prevention and control [208].

- **Legislation**

This sub-criterion assesses the company's involvement in writing new environmental legislation for the country or region in which it operates. In South Africa, companies are invited to participate in the writing process by making presentations as well as sharing information and knowledge. Companies can choose whether to dedicate resources to this participative process as well as the resource amount. Companies can therefore decide what contribution they are making to environmental sustainability on a macro or micro level in this regard. For example, large companies in South Africa's petrochemical and energy sectors are members of the NGO National Association for Clean Air (NACA) [210], which, in turn, plays a fundamental role in providing input to the new national Air Quality Bill currently being passed in the South African government.

- **Enforcement**

Companies can contribute to improvements in the environment on a community, regional, or national level by assisting in enforcing environmental laws, standards and/or safe practices. Green supply chain management is one example of how companies can assist in such enforcement. Green supply chain management entails extending the traditional supply chain to allow for product and process stewardship, i.e. considering the total immediate and eventual environmental effects of all products and processes [211]. The stewardship concept is based on recognising that organisations' environmental effects include the environmental impacts of goods and processes from extracting raw materials to using the produced goods and finally disposing of these goods (Lamming and Hampson as cited in [211]). One example of a company that actively participates in greening the supply chain is BMW South Africa, who shifted their focus to the suppliers after the company received ISO 14001 certification in October 1999 [212]. Philips Electronics' 2003 sustainability report introduced provisions requiring its 50,000 suppliers worldwide to practice social and environmental sustainability [213]. The European Union also motivates business to take the green supply chain concept further to include social aspects [21]. The international aid agency OXFAM supports this view. This agency believes that large companies' purchasing practices can result in improved labour conditions for women in the garment industry in Cambodia [214].

3.4.5 Stakeholder Participation

Stakeholder Participation focuses on the relationships between the company and all its stakeholders, both internally and externally, by assessing the standard of information sharing and the degree of stakeholder influence on decision-making.

The origin of the stakeholder concept, if not the actual use of the term, can be traced to the Great Depression in the early 1930s when General Electric Company identified four major "stakeholder" groups (Preston as cited in [160]). System theorists in the 1950s and corporate planners in the 1980s also included the stakeholder concept in their thinking [215]. The development of the stakeholder theory centred around two related issues, namely:

- defining the stakeholder concept and identifying stakeholders; and
- classifying stakeholders into categories [215].

Freeman defined a stakeholder as "*any group or individual who can affect or is affected by the achievement of the firm's objectives*" [216]. Clarkson [160] refined the definition of stakeholders as "*any persons or groups that have, or claim to have, ownership, rights or interests in the corporation and its activities, past, present and future. Such claimed rights or interests are the result of transactions with or actions taken by the corporation and may be legal or moral, individual or collective.*" Wartick and Wood [69] distinguish between six types of interests that stakeholders can

have in a company, namely material, political, affiliative, informational, symbolic and/or spiritual. Stakeholders’ power base normally lies within one or more of the following three domains:

- formal or voting power;
- economic power; or
- political power [69].

There are various classification systems for stakeholders. Freeman [216] classified stakeholders as either internal or external, while Clarkson [160] distinguished between primary and secondary stakeholders. Primary stakeholders are “those without whose continuing participation the corporation cannot survive as a going concern” [160], while secondary stakeholders are defined as “those who influence or affect, or are influenced or affected by, the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival” [160]. Wheeler and Sillanpää [2] refined this classification by also distinguishing between social and non-social stakeholders (see Figure 3-4). Another more general way of classifying stakeholders is shown in Figure 3-5.

<p>Primary Social Stakeholders</p> <ul style="list-style-type: none"> • Local Communities • Suppliers & Business Relations • Customers • Investors • Employees & Managers 	<p>Secondary Social Stakeholders</p> <ul style="list-style-type: none"> • Government & Civil Society • Social and Third World Pressure Groups and Unions • Media & Commentators • Trade Bodies • Competitors
<p>Primary Non-Social Stakeholders</p> <ul style="list-style-type: none"> • Natural Environment • Non-Human Species • Future Generations 	<p>Secondary Non-Social Stakeholders</p> <ul style="list-style-type: none"> • Environmental Pressure Groups • Animal Welfare Pressure Groups

Figure 3-4: Stakeholder Classification System [2]

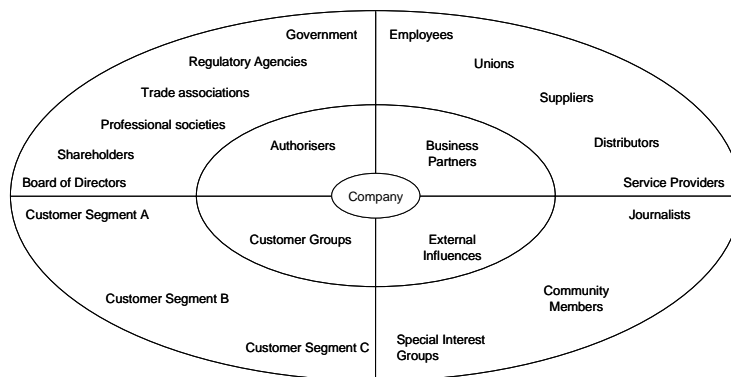


Figure 3-5: Corporate Stakeholders [156]

Stakeholder management is deemed as crucial to a company, as treating stakeholders in an ethically and socially responsible manner has been seen as the core of corporate social responsibility [217]. Stakeholder management has also been described as the tool to connect strategy to social and ethical issues [69].

Companies can follow different approaches towards stakeholder management based on the company’s attitude towards stakeholders, i.e. the company’s stakeholder orientation. Various theories have been developed to classify this behaviour in companies (see Table 3-5 for an overview). The commonality between all these theories is that companies can adopt the following two distinct attitudes towards stakeholders:

- the stakeholder is taken into account for the good of the firm, i.e. as a means to an end; or
- the stakeholder is taken into account as a matter of principle, i.e. an end in itself [218].

Table 3-5: Comparison of Classification Theories of Stakeholder Oriented Behaviour [218]

Authors	Stakeholder Orientation				
	Low social responsibility —————> High social responsibility				
Kohlberg (1969)	Pre-conventional	Conventional		Post-conventional	
McAdam (1973)	Reactive	Defensive	Pro-active	Acquiescent	
Wartick & Cochran (1985)	Social Responsiveness		Social Responsibility		
Goodpaster (1991)	Strategic Stakeholder Synthesis		New Stakeholder Synthesis		
Oliver (1991)	Manipulate	Defy	Avoid	Compromise	Acquiesce
Frederick (1991)	CSR 1		CSR 2		
Logsdon & Yuthas (1997)	Managerial Prerogative Stakeholder Theory	Stockholder Theory		Stakeholder Theory	

Given the importance of stakeholder management, a separate criterion is thus proposed to assess the relationships between the company and its internal and external stakeholders. The criterion is divided in two sub-criteria, namely Information Provisioning and Stakeholder Empowerment.

3.4.5.1 Information Provisioning

This criterion aims to assess the quantity and quality of the information shared with stakeholders. Information can either be shared openly with all stakeholders, i.e. collective audience, or shared with targeted, specific groups of stakeholders, i.e. selected audience. Sharing information with stakeholders is critical to the trust relationship between business and its individual stakeholders. It has been argued that the level of trust between a firm and, for example, members of the community, can be expressed as a function of the information asymmetry between them regarding environmental practices (Kulkarni as cited in [200]). All stakeholders are not interested in all business sustainability issues and Azapagic [219] summarised the key stakeholders and their primary interest in the business (see Table 3-6).

Table 3-6: Primary Interests of Stakeholders [219]

Stakeholder	Sustainability Issues		
	Economic	Environmental	Social
Employees	☹	☺	☹
Trade Unions	☹	○	☹
Contractors	☹	☺/○	☺/○
Suppliers	☹	○	○
Customers	☹	☺	☺
Shareholders	☹	☺	☺
Creditors	☹	☺	☺
Insurers	☹	☹	☹
Local communities	☹	☹	☹
Local authorities	☹	☹	☹
Governments	☹	☹	☹
NGO's	☺	☹	☹

Key: ● Strong Interest; ☺ Some interest; ○ No interest

This criterion's two sub-criteria are:

- **Collective Audience**

Collective Audience assesses information shared with all stakeholders. Information can be shared by various means, for example public reports, public announcements in newspapers, press statements, internet web pages, information leaflets, etc.

- **Selected Audience**

Selected Audience focuses on information sharing with individual stakeholder groups, for example employees, community, customers, unions, etc. (See Figure 3-4 and Figure 3-5 for detail groups). The information sharing element of the company's industrial relations are thus assessed as part of this criterion. It is believed that industrial relations were a response to the de-humanising impact of the technocratic corporations [2] and that the roots of modern trade unionism developed during the Industrial Revolution in an attempt to deal with the social problems of that time [172]. This criterion therefore links directly with the Internal Human Resource criterion and its sub-criteria. This criterion also links with the environmental criteria as well as with the External Population criterion and its sub-criteria.

3.4.5.2 Stakeholder Empowerment

Companies do not respond to each stakeholder individually, but must answer the simultaneous demands of multiple stakeholders [215]. Stakeholder participation can therefore only be achieved if the various stakeholders' opinions are known throughout the company. The company must thus "empower" the stakeholders by ensuring structures to capture and distribute the information.

Stakeholder participation in ideal terms of corporate social responsibility is when the various stakeholders' views are taken into account at all levels of the decision-making processes in all areas of the company [218]. Stakeholder influence thus assesses two aspects in two different sub-criteria, namely:

- **Decision-Influence Potential**
The criterion assesses the degree to which the company actually incorporates the stakeholders' opinions into operational decision-making.
- **Stakeholder Empowerment**
The criterion assesses the quality and quantity of structures to ensure that stakeholders can express their views and that it is known throughout the company.

3.5 Conclusion

A sustainable development framework, which can directly be applied to projects to ensure their alignment with sustainable development, does not exist at present and a definite need for such a framework has been identified. The chapter proposes a framework to assess the sustainability of an operational initiative, including projects, within the three dimensions of sustainable development (see Figure 3-1 for level 1 to 3 of the framework). An additional three levels of criteria and sub-criteria are proposed for the social dimension. These criteria address both internal as well as external social impacts (see Figure 3-6). The proposed social sustainability assessment framework needs to be verified and validated to ensure completeness and relevance.

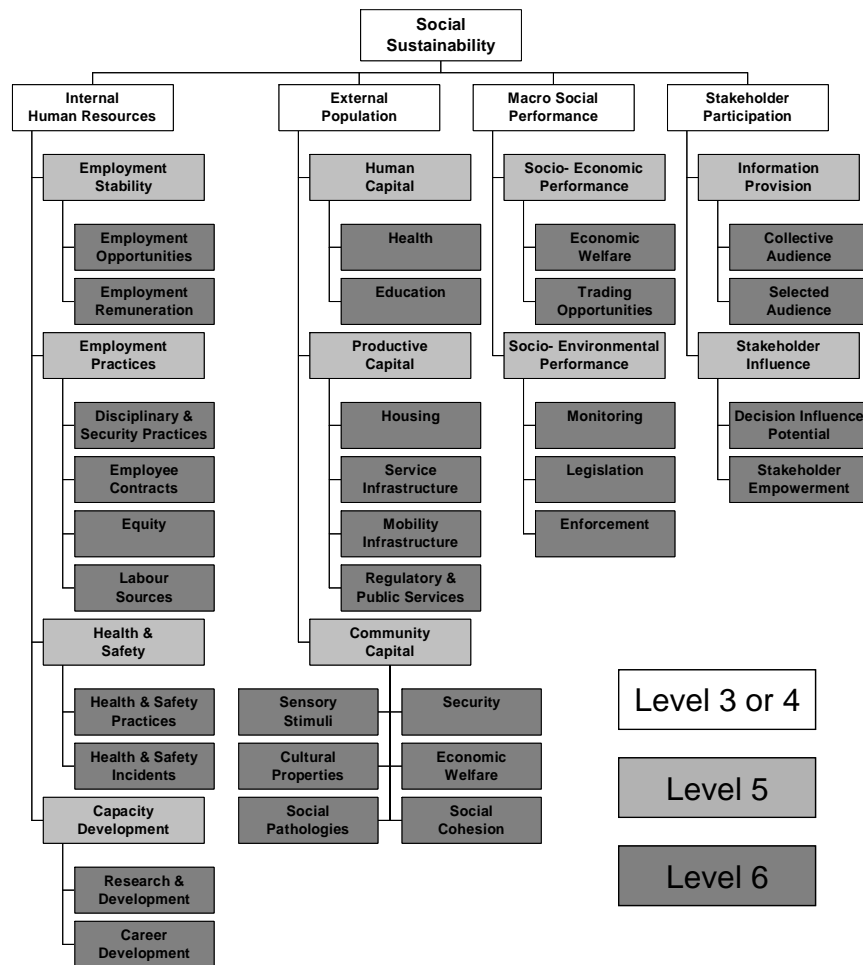
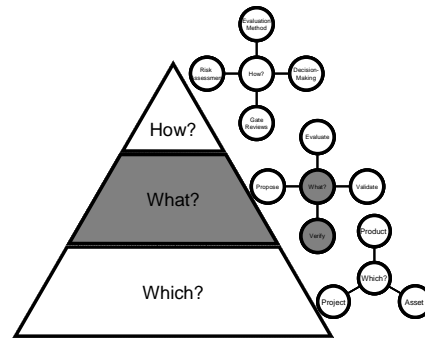


Figure 3-6: Proposed Social Sustainability Assessment Framework

4. Verification of the Social Sustainability Assessment Framework



The chapter discusses the verification of the proposed social sustainability assessment framework. The proposed framework has to be verified to ensure the completeness thereof, i.e. to ensure that all the social aspects relevant to an operational initiative’s life cycle are included in the framework. The life cycle approach followed therefore implies that verification should address the three asset life cycle phases that can have social impacts [see Figure 2-8 and section 2.5]. Since the need for case studies arose out of the desire to understand complex social phenomena [220], a case study approach is followed for the verification. A Detailed Case Study Protocol has been developed (refer to Appendix F) to assist with the reliability of the research approach.. Different sets of case studies were studied for each life cycle phase (See Figure 4-1 for verification structure). The objective with these case studies is descriptive in nature and thus the general analytic strategy is to describe the social aspects in relation with the proposed framework and to identify any social aspects that cannot be classified into the framework. In the Operational phase archival analysis of sustainable development reports are also used to ensure comprehensiveness. Information within the public domain was used as far as possible. Where such information was unavailable, the company names are withheld to protect privacy.

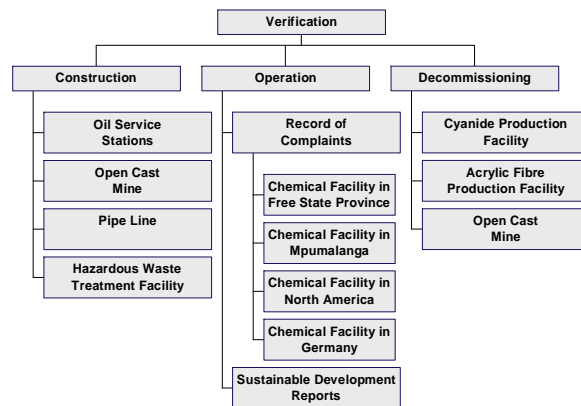
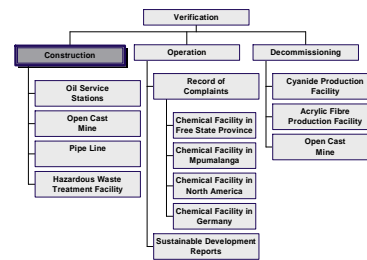


Figure 4-1: Case Study Approach for Social Sustainability Framework Verification

4.1 Framework Verification Part 1: Construction Phase

“ From the time of the earliest announcement of a pending policy change or a rumour about a project, both hopes and hostilities can begin to mount; speculators can lock up potentially important properties, politicians can maneuver for position and interest groups can form or redirect their energies. These changes occur by merely introducing new information into a community or region” [162]



The unit of analysis for this part is the construction project of a new operational initiative. The project progresses through the normal project life cycle phases and concludes when the operational initiative complies with the set standards of production and is handed over to a business unit. The following four construction projects will be investigated:

- construction of oil service stations - this is one large capital project consisting of various smaller projects. Some of these smaller projects have been completed, while others are still ongoing. All projects follow the same approach;
- open cast mine - this project was terminated due to public resistance and legal problems. The project progressed to the feasibility/basic development phase;
- natural gas project - the project consisted of sub-projects which focused on developing gas fields and constructing a pipe-line from one country to another for transportation of gas. The project also included projects aimed at converting current chemical plants and networks to use the gas as feedstock. These sub-projects are, however, excluded from this case study and the study will therefore only focus on constructing the pipe line and developing the gas fields in Mozambique; and
- hazardous waste treatment facility - although the project completed the feasibility phase, the preliminary Environmental Impact Assessment (EIA) study was rejected and the project subsequently terminated.

These four projects have been chosen due to the unique social character of each, namely:

- the Oil Service Station projects are executed within society's direct living spaces as oil service stations are built in suburbs;
- the open cast mine project is an example of a project that was stopped due to public resistance;
- the Natural Gas project serves as an example of a Greenfield project within a country in which the company has no current operations; and
- the hazardous waste treatment facility project demonstrates the impact of social perceptions on projects.

Below follows a discussion on each of the projects' background information, where after any relevant social issues or problematic social issues are classified in terms of the proposed social sustainability framework. Appendix F contains the detailed case study protocol, which explains information sources

and field procedures. The case studies aim to both identify social aspects relevant to the project as well as to classify these aspects within the proposed framework.

4.1.1 Oil Service Stations

4.1.1.1 Background to the Project

The case study investigated the construction of oil service stations by a South African petrochemical company. The Main Supply Agreement and the Blue Pump Agreement between the company and other oil companies in South Africa expired on 31 December 2003. However, when the company gave notice of its intention to end these agreements in 1998, it also gave notice of its intention to enter the retail and commercial fuel market [221]. Together with a Black Economically Empowerment (BEE) service station group, the company started a project to ensure that the merged entity would have 300 service stations by middle 2004, i.e. 150 each. The Oil Service Station project's indicated cost was R410 million. The project's envisioned completion date was December 2004 [222].

4.1.1.2 Project Methodology

The main project, i.e., to ensure 300 operational service stations by the middle to the end of 2004, progressed through the company's stage-gate project management model. Once the project reached the execution part, constructing the individual service stations was handled as small projects on its own. These projects followed the principles of the stage-gate project management model, but not necessarily the specific phases. These projects can be viewed as consisting of six phases, namely:

- the suspensive conditions phase, which entails meeting the zoning requirements, the EIA study, financing pre-conditions and ensuring that accesses are approved, etc.;
- the registration phase, which entails registering all legal documents;
- final alignment, which takes the form of a meeting before construction to ensure that all requirements from EIA, access approvals, etc., are adhered to and that all role-players in this phase are aligned. This ensures timeous completion of the construction phase;
- execution, i.e. constructing the service station and training the employees;
- merchandising; and
- operation, which is when the site starts pumping and operating as a business entity [223].

The individual projects have a holistic focus that looks beyond the electronic forecourt system to include all fast-moving-consumer-goods activities expected to take place at the service stations [221].

4.1.1.3 Social Issues Relevant to the Project⁷

The social issues relevant to the smaller individual projects are depicted in Figure 4-2. The issues specifically addressed in the individual projects were mostly been addressed pro-actively. The reasons

⁷ All information with regards to social issues has been retrieved via personal communication with project team members unless otherwise stated.

for addressing these issues varies from legislation requirements, public pressure as well as lessons learnt from similar projects. The issues are not necessarily addressed in the same phase through-out all the projects, as the phase rather depends on the service station project’s specific location. The general rule nevertheless advises project teams to not only address the social issues as soon as possible but also to address the aspects pro-actively rather than reactively. Approximately only 2% of a service station construction budget is spent on addressing social issues

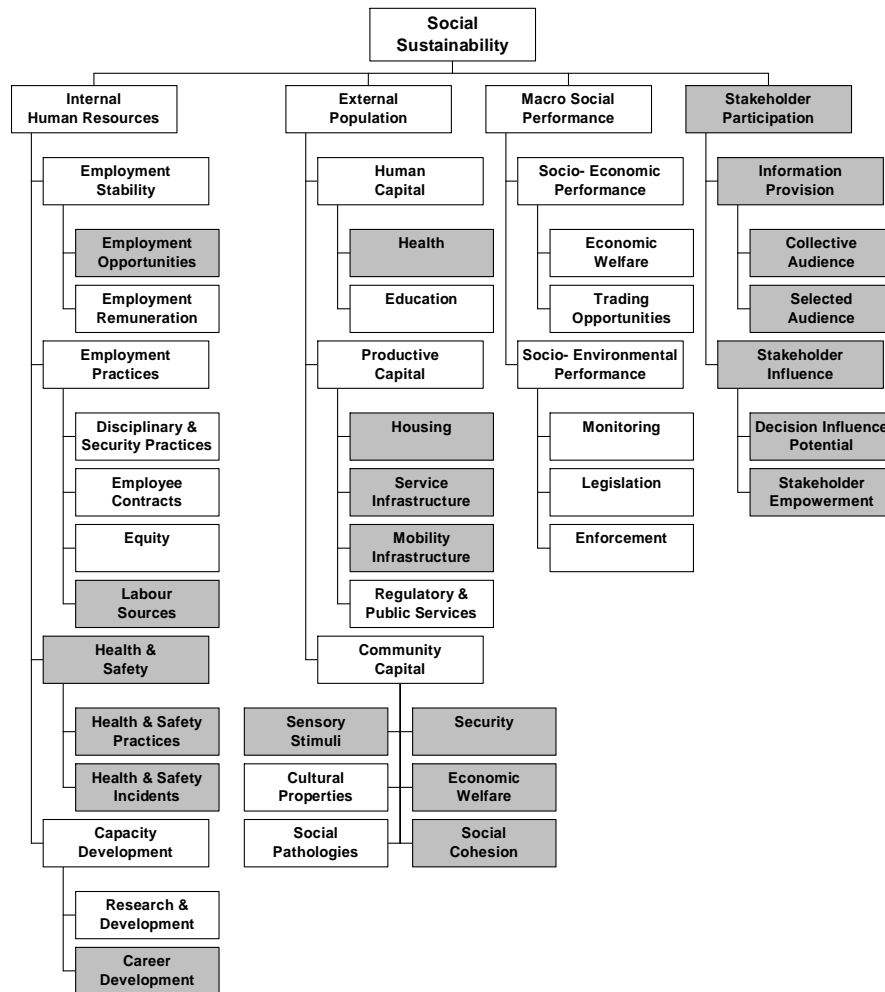


Figure 4-2: Social Issues Relevant to the Construction of Individual Service Stations

a) Employment Opportunities & Labour Sources

Each service station offers 24 permanent job opportunities. Temporary job opportunities are also created during the construction phase. Construction is, however, normally outsourced to contractors who might have permanent construction crews. The social issue of job opportunities is one of the project’s benefits to society. This issue is addressed in all EIAs, since it is a requirement to investigate socio-economic impacts. The construction contractor are also encouraged to use local labour as far as possible.

b) Health and Safety

Health and safety considerations are taken into account during the design phase. These issues are addressed in all EIAs on a case-by-case basis. Several generic issues exist and are incorporated as a rule, while others are project specific. The Occupational Health and Safety (OHS) Act, all relevant regulations and local bylaws regarding health and safety serve as a baseline.

c) Career Development

The individual projects involved extensive training of the permanent personnel. The company's facilities in the Free State province were used for the training [221]. The training programme focused on customer service as well as worker safety when handling dangerous substances. The Occupational Health and Safety Act requires that all employees be suitably trained to perform the job expected of them while ensuring that their own safety is not at risk.

d) Health

A generic study, focusing on the health impact of Volatile Organic Compounds (VOCs) on the community of the proposed projects, was undertaken. The study was made available to all stakeholders and was included as part of the individual sites' EIAs, especially to manage wrong community perceptions with regards to health. The main results of this study indicated that neither the community nor the personnel was at risk from organic vapours emitted from a service station.

e) Housing

Although this criterion was not addressed in all individual projects, it was in some cases either necessary or demanded by stakeholders. The issue was not the availability of houses, but rather the impact of the planned development on real estate prices in nearby residential areas. Specialist studies indicated that the proposed developments would positively impact real estate prices in the long-term and thereby addressed the problematic issue.

f) Service Infrastructure

The criterion was addressed pro-actively. For a developer to go onto site and start construction, all relevant services, i.e. water, electricity, refuse removal, etc., have to be in place. Usually these services are sourced from the local municipality. A service station normally occupies three stands. It uses approximately 1,500 liter water per day, which is higher than three households' average water use. Boreholes are used where water is not readily available. The service station also uses more electricity than three households and generates more waste. The service station would use contractors to manage waste and the electricity proposed no problem. The service station thus contributes to the electricity and water loading on the local municipality's service infrastructure.

g) Mobility Infrastructure

Where required, this criterion was addressed reactively in all provinces except the Gauteng province. The Gauteng province has stricter legislation and the EIA process requires a study showing the proposed development's impact on the traffic flow patterns.

h) Sensory Stimuli

The impacts on noise levels and air pollution were studied as part of the EIA. The impact of lights on the nearby community members' sensory stimuli has also been studied.

i) Security

The oil industry's security standards must be adhered to under all circumstances.

j) Economic Welfare

Economic welfare is relevant in this project, since the existence of a new service station can have an impact on other economic activity. In the Gauteng province, guidelines stipulate that new service stations should not be constructed within a three kilometre radius of existing service stations.

k) Social Cohesion

The criterion is relevant, since the zoning requirements (phase 1 of the project, see section 4.1.1.2) consider both the desirability of the development as well as the community's need for the development. At that stage, community members can also object to the proposed development.

l) Stakeholder Participation

Stakeholder participation is addressed by following the normal stakeholder participation process as required by the EIA study.

4.1.1.4 Problematic Cases

In certain cases, some social issues have become problematic. These issues are dealt with by either having public meetings or ignoring it if not deemed as truly relevant. In extreme cases, some individual projects have been stopped due to public resistance against the proposed development. In one specific case, the project has also been stopped because the impact on the mobility infrastructure was viewed as unacceptable.

4.1.2 Open Cast Mine next to the Vaal River

4.1.2.1 Background Information

In 1996, Sasol publicly announced the company's intention to develop an open cast strip mine on the banks of the Vaal River, a project referred to as the North West Mine Project. The project's motivation base was that the Sigma Colliery's reserves had reached the end of its economic life. This posed a

threat to the future of Sasol Chemical Industries (SCI), based in Sasolburg, as the mine supplied SCI since 1952. Ultimately, a threat to SCI's existence was a direct threat to Sasolburg's existence [224].

In response to the proposed project, a Non-Profit Organisation Save the Vaal Environment (SAVE), was formed in June 1996. SAVE had the following objections regarding the project:

- all alternatives to supply SCI with feedstock had not been investigated;
- the proposed mine would damage a wetland irreparably;
- the proposed mine would have an impact on property values due to the impact on/loss of sense of place in the surrounding area;
- the project would have a negative impact on job creation in Zamdela, as house workers would loose employment if river properties' owners no longer visited the area;
- the proposed development could have a negative impact on tourism; and
- the independent consultants' independence was also questioned [225, 226].

Sasol believed the project's real challenge to be "*the distinction between true environmental issues and the concerns about the reduction of residential property values along the Vaal River*" [227]. The dispute between Sasol and SAVE ended in a court case. The court case was, however, not about environmental issues but about determining the role of Interested and Affected Parties (IAPs) in all activities of the mining industry [227].

The Minerals Act 50 of 1991 contained incremental decision-making [228]. The mining authorisation procedure involved firstly granting a mining license in terms of section 9 of the Act, and thereafter granting authorisation to commence mining in terms of section 39 of the Act if all prerequisites are met [227]. Environmental concerns were traditionally not taken into account when deciding whether to granting a mining license (section 9) and it was perceived to be the Departments of Minerals and Energy's (DME's) screening process involving departmental officials only [227].

Although SAVE contended that they was entitled to oppose the application for a mining license, the Director - DME informed SAVE twice that it would not consider environmental objections for granting the mining license, since it was premature in the process. DME consequently issued a mining license to Sasol on 22 May 1997 [229]. SAVE, however, won their court case as well as the appeal.

4.1.2.2 Social Issues Relevant to project

Classification of the social issues of concern to the project was based on the proposed sustainability framework (Figure 4-3).

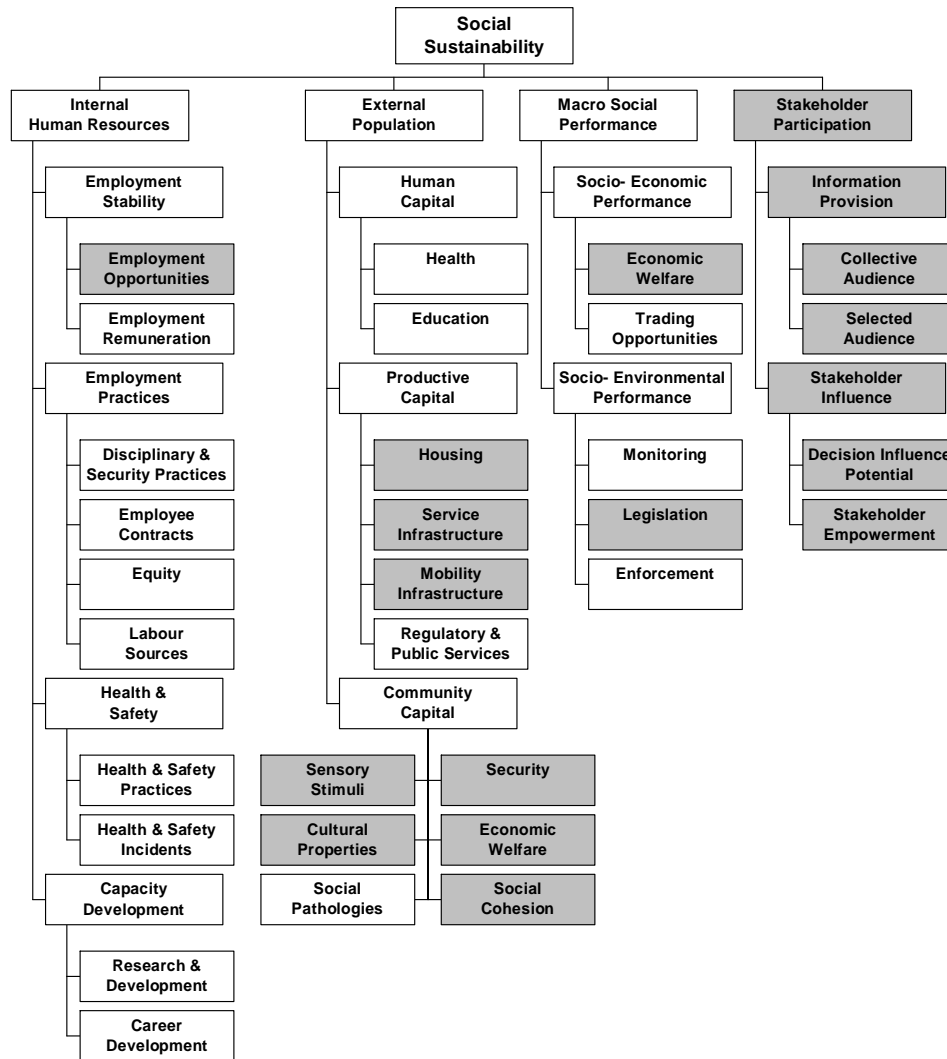


Figure 4-3: Social Criteria Relevant to the Construction of the North West Mine

a) Employment Opportunities

The proposed mine would employ 300 people over its 20 year life-span [230:121]. These new employment opportunities would have helped migrate employees from the Sigma underground mine, which faced closure due to economic reasons. Approximately 650 to 700 miners would, however, still face retrenchments with possible employment opportunities in Secunda. A moderate negative impact had been predicted [230: 256]. SAVE claimed that the impact on the criterion would be even more negative, given lost employment opportunities for, amongst others, house workers, would property owners decide not to return to their properties and tourism decreased [226]. The opening of the mine would also result in the loss of 20 jobs for farm workers currently employed on farms that would form part of the proposed mine [230:265]. The criterion is even more relevant in this specific case, since the no-go option for the project implied that SCI might face closure, which would destroy 3,000 employment opportunities [231,232].

b) Housing

The criterion is very relevant in the specific project. Some observers believed property prices were the true reason for the community's objection. The announcement of the project had an immediate low to moderate negative impact on the property values in the area, with a predicted short to medium-term highly negative impact on the property values. Over the long-term, i.e. after the mine's closure, the mine was predicted to have no impact on property values [230:258].

c) Service Infrastructure

The new proposed mine would add an additional burden to the community's service infrastructure, although the overall impact of the mine closure and new mine might have resulted in a net-effect of a lesser burden on the infrastructure. However, current electricity lines would have to be dismantled and rerouted. A new power grid would also have to be installed [230: 150].

d) Mobility Infrastructure

In the short to medium-term, a low to moderate increase in traffic on certain roads would occur, as workers would have to be transported according to the three shift cycle on which the mine would operate over 24 hours. Not only is the burden on the mobility infrastructure increased, but the growing traffic could also result in a low inconvenience factor for residents [230: 260 and 270].

e) Sensory Stimuli

The proposed mine would change the aesthetics of the river area. It was proposed to construct berms to mitigate the negative impact. While the berms would be constructed, a low to very high negative visual impact would be experienced. Some residents argued that berms would not mitigate the impact. In addition, the proposed mine would result in a low to moderate increase in ambient noise levels, an increase in dust, particles as well as vibrations. The vibrations were likely to have a high negative impact on the fish. Although all impacts are below legal limits, residents did not receive the sensory stimuli impacts well, for example:

“It's irrelevant to me whether the noise impact is 2 dB or 5 dB. The point is that there would be a mine operating over there, and knowing that would completely change how I feel about the area. It would ruin the feeling of the place.” [230:262]

f) Security

The proposed mine would result in an increase in the opportunities of crime in the area, due to increased human and vehicle traffic. The security criterion is thus relevant and influenced negatively [230: 261 and 270].

g) Cultural Properties

The criterion is relevant in the project, since a conveyor would have to be constructed over an “iron age site”. In addition, two grave yards are situated on one of the proposed development sites. However, environmental consultants believed that the impact could be mitigated by relocating the grave yards and taking “*mitigatory measures*” when constructing the conveyor [230: xi].

h) Economic Welfare (External Population) and Economic Welfare (Macro Social Performance)

The impact assessment concluded that the status quo regarding direct economic impacts on regional and national level would be maintained. Although Sasolburg would experience short-term job turnovers, the region’s Gross Geographic Product (GGP) would remain consistent and might experience a small gain after five years. Indirectly, the economic profile would, however, be changed by the loss of agricultural land. The economic welfare would also be influenced by house prices decreasing. If the project did not proceed and no alternatives were found, scaling down SCI would result in a lost of approximately R2.5 million per month to the Sasolburg economy and between R87,380.00 and R218,450.00 per month to the regional economy. In addition, the national economy would experience a decline of between R46,260.00 and R115,650.00 per month [230: 145].

i) Social Cohesion

The residents claimed that the proposed mine would destroy the special “sense of place” that the area had. The impact assessment referred to this as intrinsic value and stated:

“The intrinsic value of the ambience of this stretch of the Vaal River cannot readily be quantified ... as it has intuitive rather than rational parameters.” [230: 263]

Social cohesion is also relevant when classifying the negative impact on bird-watching and water sports in the short and medium-term.

j) Legislation

Legislation is relevant in this project, given the project’s involvement in court cases surrounding mineral legislation.

k) Stakeholder Participation

Stakeholder participation is very relevant to the project. When the project started, there was no good solid relationship between the company and all of its stakeholders due to ignorance on both sides. Both parties believes that better stakeholder relationships could have resulted in a different ending of the project. Stakeholders believed that the company was withholding information. This was, in fact, the case, given the restrictions around the disclosure of sensitive information. Stakeholders consequently felt excluded from the decision-making processes [227]. The project highlighted that stakeholder

participation is an on-going process and that it is important to get to the root of stakeholder concerns. Regular public meetings were implemented after the project. Sasol states that one of the lessons learnt is to move from “rights-based to interest-based negotiations” [233].

4.1.3 Natural Gas Project

4.1.3.1 Background Information

The natural gas project aimed to bring natural gas from the Inhambane province in Mozambique via a 865 km pipeline to the Mpumalanga province in South Africa [234] (Figure 4-4 shows the route of the pipeline [235]). To achieve the above, the project also involved the design, construction and commissioning of the infrastructure needed to clean and compress the natural gas before piping it to customers and petrochemical plants in South Africa. Approximately US\$1.1 billion has been invested in the 20 month project.

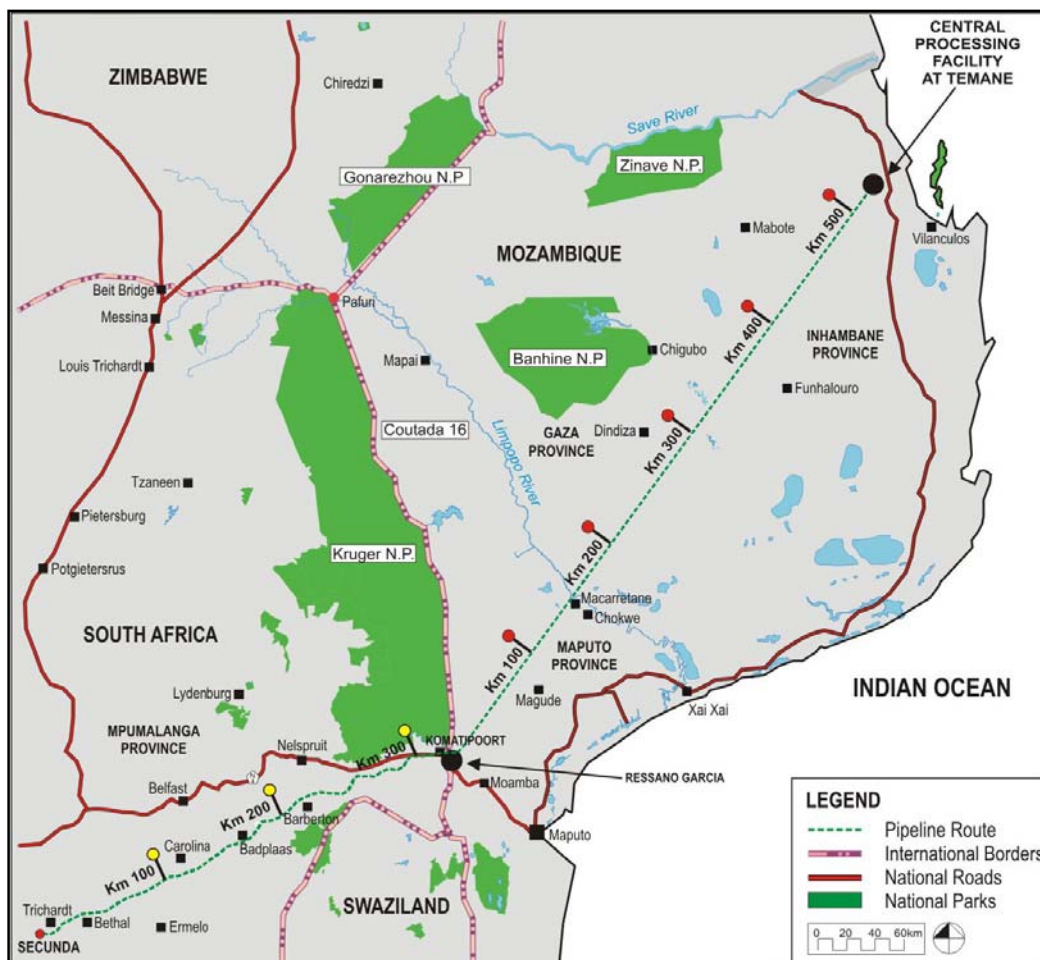


Figure 4-4: Route of Pipeline [235]

The project consisted of eight sub-projects, namely:

- Temane/Pande Gas Field Exploration;
- Temane/Pande Gas Field Development - Central Gas Processing Facility;
- Temane - Ressano Garcia Pipeline: Mozambique;
- Komatipoort-Secunda Pipeline - South Africa;
- Secunda Interface;
- Secunda Plant Expansion;
- Sasolburg Plant Conversion; and
- Natural Gas Network Conversion [234].

Sasol funded part of the project, while international funding contributed approximately 30% of the project's funding [234]. The international funding organisation required that certain policies and procedures be followed or implemented during the project. The project had to meet certain obligations and commitments regarding social development. A social development fund was therefore created to execute specific social development projects identified and requested by the communities [236]. The natural gas project is an excellent example of the benefits of pro-actively addressing social aspects and establishing transparent stakeholder relationships. Various interesting strategies and best practices followed by the project can be used for benchmarking purposes. Since the aim of the case studies is to identify relevant social aspects, these strategies and practices as well as other project management related aspects will not be discussed in detail.

This case study will not cover the entire project but will only focus on these two sub-projects:

- Temane/Pande Gas Field Development, and
- Temane - Ressano Garcia Pipeline: Mozambique.

4.1.3.2 Case Study Approach

For each sub-project, EIA reports and Environmental Management Plans (EMP) were developed. Some generic reports applicable to the entire project were also generated. Figure 4-5 depicts the project’s document structure and highlights the documents studied. More details on the specific elements of the individual EIAs and EMPs studied are provided in Table 4-1. The case study approach was to study these documents and to conduct personal interviews with project team members.

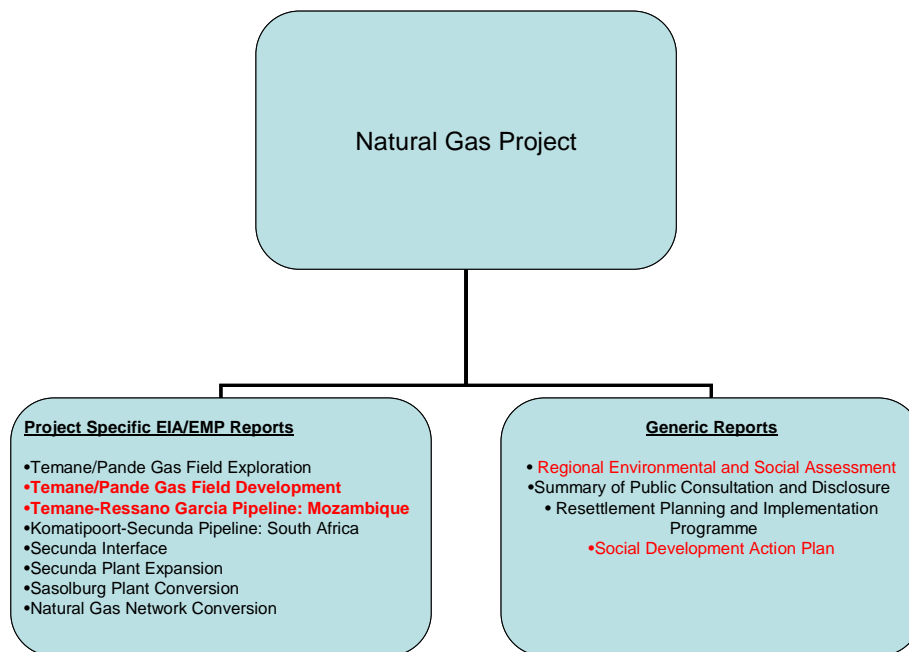


Figure 4-5: Document Structure of the Natural Gas Project [235]

Table 4-1: Documentation Studied

Temane/Pande Gas Field Development	Temane - Ressano Garcia Pipeline: Mozambique
Specialist Report 05: Impact on Socio-Economics	Specialist Report 04: Socio-Economic Impacts
Specialist Report 07: Impact on Public Health and Social Pathologies	Specialist Report 05: Impact on Cultural Heritage
Specialist Report 09: Impact on Public Safety	Specialist Report 06: Public Health and Safety
Specialist Report 10: Impact Noise	
Specialist Report 11: Impact on Sense of Place	

4.1.3.3 Social Issues Relevant to Project

Figure 4-6 shows the social issues identified as relevant to the project, mapped on the proposed social sustainability assessment framework. The project followed a pro-active approach to addressing social aspects.

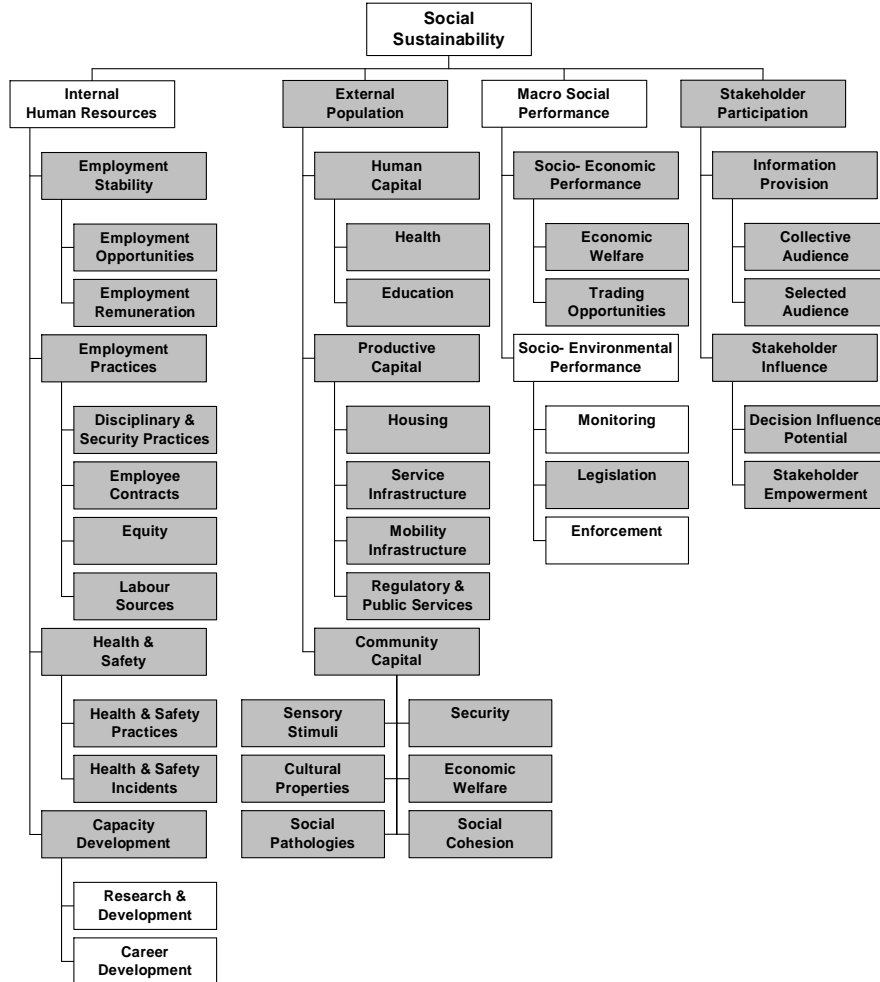


Figure 4-6: Social Issues Relevant to Project

a) Employment Opportunities

IAPs raised employment opportunities as an issue in both EIAs, i.e. developing the gas fields and building the Mozambique section of the pipeline. Although IAPs acknowledge the lack of skilled and semi-skilled labour, local communities expected unskilled employment opportunities to be available. Table 4-2 summarises the expected employment creation in the gas fields’ construction phase [237]. However, once operational, only 80 employment opportunities would be available to local people [234]. A number of these opportunities would be permanent and other contract.

Table 4-2: Estimated Employment Creation During Construction of the Gas Fields [237]

Construction (Type of Employment)	Number of Employees	Period of Employment (in Months)	Labour Profile		
			Wage Bill (per Annum)	Foreign (Persons)	Mozambique (Persons)
Unskilled	160	17	± \$400,000	-	160
Semi-skilled	160	15	± \$1.247 million	60	100
Skilled	150	12	± \$4.27 million	120	30
Management	60	17	± \$4.4 million	50	10

The gas field development EIA highlighted employment opportunities as a possible area of concern. Although employment creation benefits the community and promotes good stakeholder relationships on the one hand, it also has the potential to cause disputes and lasting divisions. Critical aspects were the importation of outside labour sources and community perceptions regarding employment conditions and terminating temporary employees. The same applied to employment creation during pipeline construction. The number of employment opportunities for local people would depend on the extent to which the use of local contracting companies was encouraged [238]. In hindsight, the project exceeded the employment creation estimates. An average of 1,500 people was employed at any specific time. During the peak period, approximately 3,200 people were employed.

b) Employee Practices and Labour Sources

The potential controversy around employment opportunities made the criterion labour sources extremely relevant. The use of local labour sources was specified and specific employment procedures had to be developed to ensure that local labour sources were used. These procedures were communicated to community leaders and others [234]. Effective communication could also reduce a positive influx of people.

A concept of labour pools was implemented, which resulted in local chiefs in the area providing candidates for either skills training (see Capacity Development) or unskilled labour. Recruitment of unskilled labour occurred out of that specific pool and contractors were encouraged to employ semi-skilled workers from similar labour pools. The company also followed a local content policy, which was considered in the contractor selection processes.

c) Employee Contracts

The criterion is relevant since special care had been taken to communicate the temporary nature of certain employment opportunities. A Project Labour Agreement (PLA) was signed with the trade unions. In accordance with the PLA, construction workers recruited on a temporary basis signed a Limited Duration Contract (LDC), which clearly defined the job group, category and all other

conditions regarding employment. Termination was carried out in terms of the demobilisation procedure as agreed in the PLA [235].

d) Capacity Development

The criterion's relevance is derived from Sasol sponsoring:

- a skills training programme attended by all new and potential employees;
- induction programmes explaining the specific conditions of employment governing the work as well as the contractor's rules, regulations and requirements.

The above minimised the importation of labour [235]. The skills training programme was developed for a two week training period. During the first week, the language barrier was addressed to ensure familiarity with English concepts, as Portuguese is most local people's mother tongue. The second week focused on training in specific skills. The skills training programme provided training to more than 700 local people. The local chiefs nominated these people based on an agreed number of people from different villages per training programme.

e) Employee Remuneration, Disciplinary and Security Practices, Equity, Health and Safety Practices as well as Health and Safety Incidents

The project was a greenfield project in a new regulatory environment for the company. All the above criteria are therefore relevant, as current company practices might need to be adopted to adhere to regulation within the country. Where country legislation is more lenient than current business practices, the company will have to decide on the minimum level of corporate responsibility it will adhere to. Health and safety aspects relevant to the project have been dealt with in a detailed Safety, Health, Environment and Security (SHES) plan [239]. The company also had to address the possible health risks to employees, given the project environment. Malaria control procedures had to be implemented.

f) Health and Social Pathologies

These criteria are relevant, since both can be impacted on by the influx of people. The project would result in an influx of people for a temporary period. However, the need for clinics was highlighted and addressed by the social development action plan [236]. The medical facilities on site would also co-operate with local facilities to enhance the availability of services [239]. Table 4-3 shows possible impacts in the construction and operation phase of the gas fields. Public health risks regarding the pipeline were investigated and are within internationally recognised limits. It is believed that risks can be mitigated by open communication with the settlements in close proximity to the pipeline [234].

Sustainable Project life cycle management: Development of social criteria for decision-making

Chapter 4

Table 4-3: Possible Impacts on Health and Social Pathologies of the Gas Fields Project [239]

Issues Driven Assessment of the Effects on Public Health and Social Pathologies on the Population at a Local, Regional and National Level With Mitigation/Management							
Construction							
Impact	Status	Extent	Duration	Intensity	Probability	Confidence	Significance
Induced migration	Negative	Local	Medium-term	Low	Probable	Medium	Moderate
Potential increase in malaria cases of the population	Negative	Local	Medium-term	Medium	Probable	High	Moderate
Potential increase in STD and HIV/AIDS incidence rates	Negative	Local to national	Permanent	Low	Highly probable	High	Moderate
Increased access to health care facilities	Positive	Local	Long-term	Low	Probable	Low	Moderate
Improved accessibility	Positive	Sub-regional	Permanent	Medium	Definite	High	High
Potential increase in alcohol and drug use	Negative	Local	Long-term	Low	Probable	Medium	None
Operation Phase							
Impact	Status	Extent	Duration	Intensity	Probability	Confidence	Significance
Potential increase in malarial incidences due to standing water from project activities	Negative	Local to regional	Long-term	Medium	Highly probable	Medium	Moderate
Increased access to health care facilities	Positive	Sub-regional	Long-term	High	Definite	High	High
Induced migration	Negative	Local	Medium-term	Low	Improbable	Medium	None
Potential increased transmission of HIV/AIDS, STDs and other diseases/infections	Negative	Local to national	Permanent	Low	Probable	High	Moderate
Potential increase in social pathologies such as crime and drunkenness	Negative	Local	Long-term	Low	Probable	Medium	None

g) **Education**

This criterion is relevant to the project, since the social development action plan include projects focussing on education and skills training [236].

h) **Productive Capital**

This criterion is relevant, since productive capital would be influenced. Individual impacts on infrastructure and services are discussed below. However, the project would also have an impact on agricultural land. It has been estimated that 30 hectare of arable land would be permanently lost by the development of the gas field [234]. The pipeline construction might have temporary impacts on soil that can be mitigated. Loss of crops during the construction period would also be compensated [234].

i) **Housing**

This criterion is relevant, as the project involved resettling homesteads, a number of households all residing on the same property, including all buildings but excluding machambas, as well as machambas, i.e. subsistence farming plots. For the gas field, 384 machambas and 11 homesteads were resettled. The pipeline itself resulted in 164 machmbas and three homesteads being resettled [240]. Affected parties were compensated based on fair and equitable compensation calculation formulae agreed with government and all parties involved. The project also constructed an entire village to house employees as well as contractors and to accommodate office and utility buildings due to the remoteness of the plant. This village is approximately 60 kilometres from Vilankulos.

j) **Service Infrastructure**

This criterion is relevant to the project. Not only would the project rely on existing service infrastructure, but it would also implement service infrastructure to benefit the communities. During the gas field's construction period, a negative impact on water and sanitation infrastructure was predicted [239]. Numerous social development action plan projects focuses on providing drinking water to residents by means of bore holes [236]. Plans have also been made to establish gas pipelines to Maputo to provide gas to possible users [235].

k) **Mobility Infrastructure**

This criterion is relevant to the project. In the operation phase of the gas field and pipeline, the project would have a positive impact on the mobility infrastructure, since the road networks in the region would be improved drastically [239]. The access created by the project can nevertheless result in negative environmental impacts, as certain forest areas, etc. will be more accessible. In addition, the social development action plan identified three different needs of communities for road infrastructure [236]

l) **Regulatory and Public Services**

The criterion is relevant, since the greenfield nature of the project demands a detailed understanding of the regulatory structure. Traditional chiefs have been included in the communication structure. The criterion is also relevant, since some of the social development projects focus on public services, for example garments for cultural events [236].

m) **Sensory Stimuli**

This criterion is relevant to the project, as the proposed development of the gas fields would result in air pollution, dust and noise that will impact on inhabitants living in close proximity to the site. The noise impact has been rated as highly significant definite impact over the long-term [241]. During the construction phase of the pipeline, residents living in close proximity of the route might endure dust and noise. The visual impacts of the proposed development of the gas fields would be “absorbed” by the landscape [242]

n) **Security**

The influx of people can result in an increase in crime and security problems in a region. As a mitigation measure, it has been proposed that security personnel should be employed at the construction camps and development site to control criminal activities and to reduce pressure on local police services [239].

o) **Cultural Properties**

This criterion is relevant to the project. Archaeology surveys found no archaeological sites or sites of cultural significance in areas affected by the project infrastructure [234]. However, the construction could contribute to Mozambique’s archaeological heritage, as previously inaccessible areas would now become accessible, thus increasing the likelihood of archaeological findings [243]. No archaeological sites were found along the pipeline route within the zone in which construction damage is most likely [244]. Nine graves had to be relocated due to the development of the gas field and the construction of the pipeline [240].

p) **Economic Welfare**

The local communities’ economic welfare would benefit from the project by:

- the direct employment opportunities and the indirect spin-offs in the local economy, for example agricultural product markets, etc.;
- infrastructure being provided and upgraded, leading to greater accessibility; and
- improved road access could result in more tourism opportunities [242].

Over the long-term, the development would create new business opportunities that could improve the local economic welfare [237]. During the pipeline’s construction, certain communities’ economic welfare might be negatively impacted, due to loss of housing, crops or community

infrastructure [238]. These affected parties will be compensated. In hindsight, total salaries of approximately US\$ 5 million were paid in Mozambique during the construction period.

q) **Social Cohesion**

The criterion is extremely relevant, since the communities' social cohesion would definitely be impacted on. The influx of people [237, 238, 239] as well as the resettlement of certain homesteads [240] might result in a change in the social structures and thus in a change in the perceived social cohesion. Although the project's impact is rated low, the project would also definitely have an irreversible impact on the "sense of place" [242].

r) **Socio-Economic Performance: Economic Welfare and Trading Opportunities**

The project has major socio-economic benefits for the region and can even be a potential catalyst for development in the Southern African Development Community (SADC) [234]. Mozambique as a country benefits from the project's employment creation, infrastructure development as well as the additional revenue from royalties and taxes paid by the venture [234].

s) **Legislation**

As this is a greenfield project, the legislation criterion is relevant. The project team needed to familiarise themselves with Mozambique's legislation and adapted company practice, for example executing the EIAs to align it with legislative requirements.

t) **Stakeholder Participation**

Stakeholder participation has been crucial to this project. Various communication forums have been established with internal as well as external stakeholders. In Mozambique specifically, the stakeholder participation together with information sharing has been a high priority, mainly because there was no previous relationships between these stakeholders. A Mozambique office was established in Maputo. Road shows were co-ordinated from there, which attempted to familiarise targeted stakeholder groups with the project. Community liaison officers were appointed to deal directly with specific affected communities and to assist in scoping workshops held as part of the EIA process. In addition, all complaints were centrally handled in Maputo, where a complaint register was constructed. Complaints were captured, reviewed and registered, where after the specific project team was contacted to investigate complaints and take corrective actions where applicable. Feedback was provided to communities.

A monthly community workgroup forum was established. These monthly meetings took place in Maputo. The meetings aimed to report on progress and discuss complaints as well as future actions. The community workgroups were the interface between the company and society and followed a systems approach by distinguishing between six workgroups, namely:

- communications/public relations workgroup;

-
- labour workgroup;
 - resettlement and compensation workgroup;
 - environmental management workgroup;
 - local content workgroup; and
 - social development workgroup.

Members of the various workgroups visited communities and interacted with these stakeholders. Media releases were distributed frequently to enhance the project's transparency.

4.1.4 Hazardous Waste Treatment Facility Project

4.1.4.1 Background Information

Late in 1998, a Cape Town-based company, Peacock Bay Environmental Services (PTY) Ltd, and a United States of America (USA) environmental consulting and engineering company, Roy F. Weston International Holdings, Inc. (WESTON®), started investigating the feasibility of establishing a commercial hazardous waste treatment facility in South Africa. The study was motivated by the fact that South Africa did not have a commercial hazardous waste treatment facility and either exported tons of waste to such facilities in Europe or alternatively used landfills sites to handle the waste, which is not the best option from an environmental view. The US Trade and Development Agency (TDA) funded the detailed feasibility study and strategic planning analysis, which included the evaluation of:

- potential candidate waste sources;
- alternative waste treatment technologies; and
- alternative locations [245:1-1].

The feasibility study identified a rotary kiln thermal oxidation system as the best technology to pursue and that a brownfield site in Sasolburg, Free State province would be the best location. An EIA study was undertaken, including extensive public participation. The scoping report was submitted to the Free State's Department of Environmental Affairs and Tourism (DEAT) in November 2001. The project was met with a lot of resistance from national environmental Non-Government Organisations (NGOs). The Free State's DEAT rejected the proposal in October 2002, based on the following three factors:

- IAPs parties objected to the development;
- Peacock Bay Environmental Services (PTY) Ltd failed to submit a health risk report; and
- the application failed to indicate the development's cumulative effects [246].

The record of decision was appealed, but the appeal was upheld as the Free State's DEAT believed that since the potential effects could be beyond provincial matters, national DEAT should review the application. However, the Minister of DEAT referred the review back to the provincial DEAT, since it was not viewed as a national matter. The Free State's DEAT finally rejected the proposal and appeal. The lengthy process took four years and the foreign investors lost interest, after which the project was stopped [247].

4.1.4.2 Social Issues Relevant to the Project

The social issues relevant to the project were classified in terms of the social criteria. The relevant criteria are depicted in Figure 4-7.

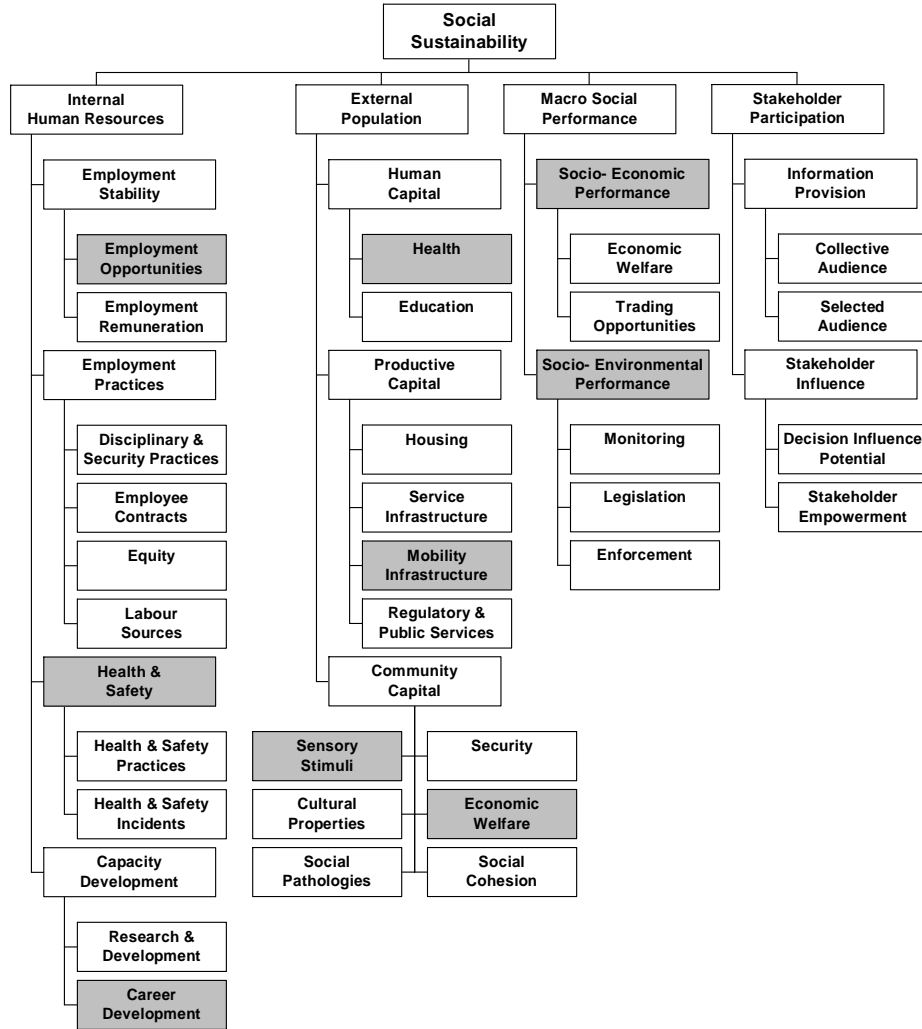


Figure 4-7: Social Criteria Relevant to the Hazardous Waste Treatment Facility Project

a) Employment Opportunities

The proposed project created short-term and long-term employment opportunities. In the short-term, i.e. estimated to be a ten month period, 250 employment opportunities would have been created by the construction of the site [248:6-33]. Once operational, the facility would have employed 65 permanent employees over its 20 year life cycle. Fifteen employment opportunities required skilled employees, 25 required semi-skilled employees and the remaining 25 employment opportunities required unskilled employees [248:6-34].

b) Health and Safety

This criterion is relevant to the project, since no hazardous waste treatment facilities existed in South Africa. Therefore all employees would receive extensive training. The preliminary EIA rated health and safety's significance as low [248: 8-56] and stated that no human health risks were expected on site. However, employees' health and safety were one of the main concerns raised by environmental groups [247].

c) Career Development

The scoping report mentions numerous training initiatives that would be pursued. All employees would receive in-house training on operational health and safety aspects.

d) Health

The preliminary EIA stated that "*Facility operations will all be conducted to minimize or eliminate potential human health and ecological risks associated with the potential effect of site operations on adjacent communities. Stack emissions will all be controlled to achieve health (protective) emissions standards and guidelines*" [248: 8-13]. However, environmental groups stated that the project proposed a landfill site in the sky that would release cancer forming emissions, thus having a negative impact on the community health [247].

e) Mobility Infrastructure

The project would influence the area's mobility infrastructure in the short and long-term. In the short-term, i.e. construction period, an increase in road traffic, especially in trucks would be experienced [248:5-5]. In the operational phase, a small increase in road and rail traffic would be experienced, since raw material, i.e. waste, for treatment, would be moved to the facility via road or rail [248:8-15]. The impact could also influence regional traffic [248:8-63]. Potential transport incidents could also occur.

f) Sensory Stimuli

The preliminary EIA stated that the facility would use state-of-the-science air pollution equipment, which would result in emissions rarely exceeding permits [248:8-38]. However, environmental groups rated air pollution, especially the production of dioxins and furans by the incinerator, as a serious concern. These groups therefore believed that sensory stimuli would be impacted on negatively [249].

g) Economic Welfare

The preliminary EIA estimated that the possible direct and indirect employment opportunities would total 240 to 300 if the rule of three is used [248: 8-73]. The community's economic welfare would thus be influenced positively.

h) Socio-Economic Performance

It was estimated that the project's construction and development would involve a direct investment of \$20 million (R160 million)⁸ [248-72]. The investment would have a positive effect on the region's economy. The project also received grants from foreign investors in the region, the United States of America (USA) TDA. However, the termination of the project resulted in the USA funding being stopped, which had a negative impact on the socio-economic performance.

i) Socio-Environmental Performance

The safely management and disposal of hazardous waste is an issue of great concern in the industrialised areas of South Africa [250]. The project was motivated, as South Africa had to address the problems surrounding hazardous waste. Treatment facilities were not available locally. From a certain perspective, it was believed that the project would have improved South Africa's socio-environmental performance, as it would have given South Africa the waste treatment expertise that it did not have. From another perspective, the project would have increased pollution and offered unsustainable waste management techniques, which would have had a negative impact on the region's socio-environmental performance.

4.1.5 Conclusion

All social aspects which manifested in the four case studies could be classified into the criteria framework. The social aspects identified by the case studies are shown in

Figure 4-8. The only criteria that failed to manifeste in any of the case studies are:

- research and development;
- monitoring; and
- enforcement.

Possible reasons might be:

- research and development normally manifest either early in an asset life cycle's design phase [251] or during the operation phase;
- none of the projects involved building additional monitoring stations. Although the aspects did not manifest clearly, they can manifest during design and operation; and
- enforcing environmental standards is a business strategy and although it might be the companies' strategy, no specific evidence could be found to indicate that environmental standards were enforced in the supply chain. Since, two of the projects did not enter the final execution phase, the criterion could not manifest.

No social issue or aspect could be found in the case studies which could not be classified in terms of the proposed framework.

⁸ A R/\$ exchange rate of R8 for \$1 was used in the preliminary EIA.

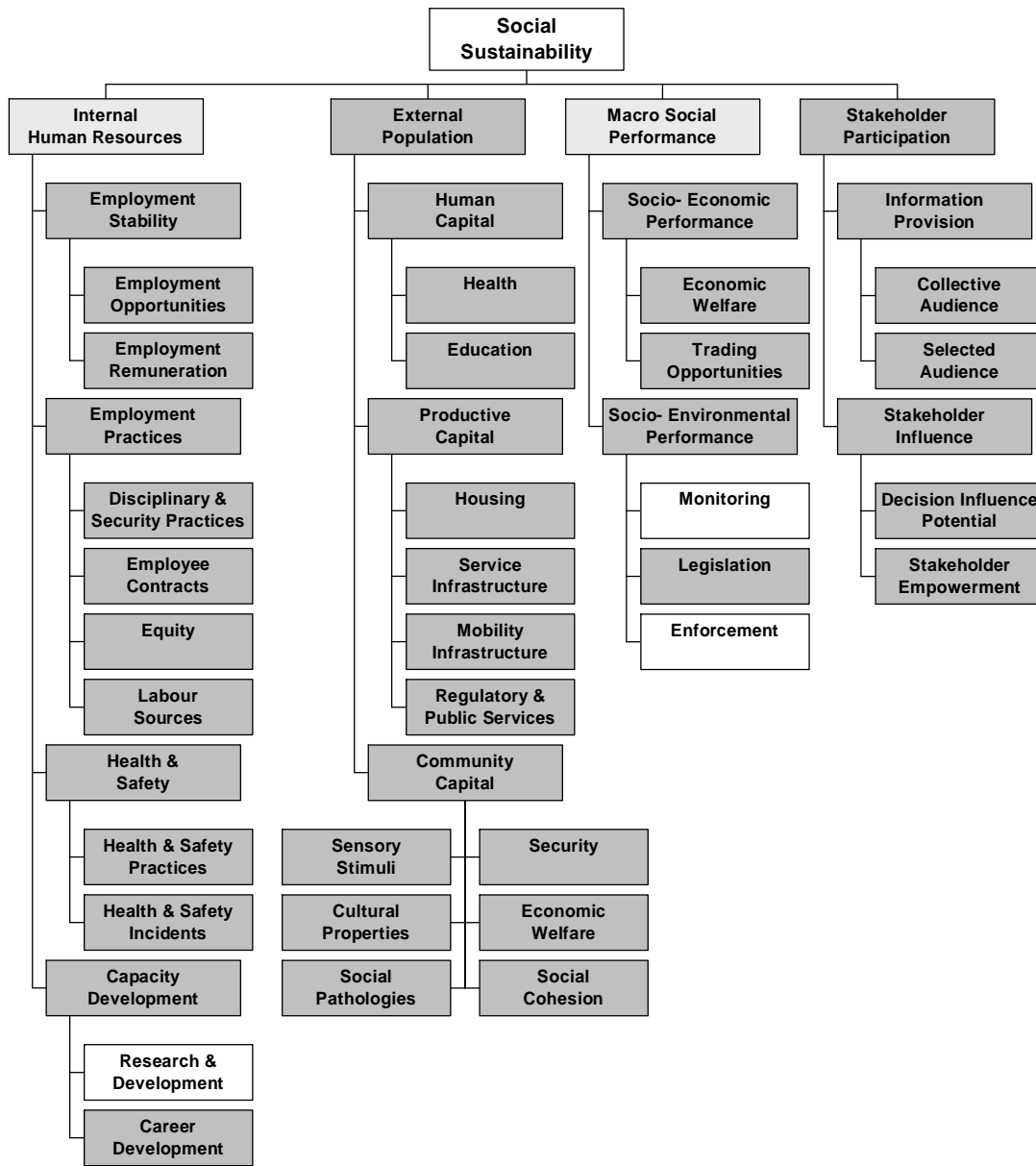
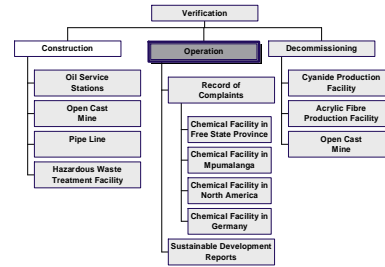


Figure 4-8: Social Aspects Relevant to Construction

4.2 Framework Verification Part 2: Operation Phase

The operational phase is verified in two separate sets of case studies. The unit of analysis for both are the operational plant manufacturing products. The following different information sources are, however, used:



- record of complaint - companies' record of complaints are investigated. The aim is to investigate records of complaints for at least the last two years for four different chemical facilities. Two of the facilities operate in developed countries, namely the USA and Germany. The other two operate in the same developing country, namely South Africa. The facilities' ages are summarised in Table 4-4.

Table 4-4: Age of Chemical Facilities

Chemical Facility	Time in Operation
USA	± 45 years
Germany	± 80 years
South Africa A	± 50 years
South Africa B	± 25 years

These four facilities are chosen in order to compare developed and developing countries. Two facilities from each type are chosen to compensate for any region specific nature of complaints. The case study relies on two information sources, namely archival records and interviews. Interviews are conducted personally or telephonically and take approximately 20 to 30 minutes. The detailed case study protocol is attached in Appendix F. The main groupings⁹ used for analysing complaints are:

- 0 Human Capital - any complaint dealing with community members' health or the community's education facilities have been classified as human capital complaints;
- 0 Productive Capital - any complaint related to the community's housing, mobility or service infrastructure, e.g. complaints about pollution on vehicles or environmental incidents that resulted in community grounds being polluted, have been classified as productive capital complaints;
- 0 Community Capital - any complaints regarding odours, noise, vibrations, aesthetics or other sensory stimuli have been classified as community capital complaints. In addition, any complaints regarding security, community cohesion, i.e. migration of workers, or cultural properties have also been classified as community capital complaints; and

⁹ The criteria have the same definition as in Chapter 3.

- 0 Human and Community Capital complaints - in certain cases, community complaints could not be classified as purely belonging to one of the three main groups. A complaint about an odour that caused eye irritation or headaches can be classified as a human capital complaint as well as a community capital complaint. Therefore, all complaints that can be classified as both have been grouped together as the fourth main criterion.
- Archival analysis of the sustainable development reports of companies - eight sustainable development reports were analysed to determine the scope of issues reported on. The reports are analysed on the following points:
 - 0 annual turnover;
 - 0 number of employees;
 - 0 use of social indicators; and
 - 0 indicator used.

4.2.1 Record of Complaints

4.2.1.1 Chemical Facility in South Africa in the Free State Province

4.2.1.1.1 Background Information

The chemical facility is located on a 181Ha industrial site in the Free State. Construction started in the early 1950s and portions of the plant started production in 1954. By the end of 1955, the plant was fully operational. The chemical facility manufactures diverse solvents, alcohols, waxes, acids, alkali's explosives and fertiliser by-products. The facility employs approximately 3600 permanent employees. The facility contributes approximately 12% to the region's geographical economy [252].

4.2.1.1.2 Complaint Process

The region in which the chemical facility is situated also hosts various other chemical industries. The industries have developed a collective process to deal with external complaints. The process is shown in Figure 4-9.

The chemical facility also has a formal site procedure in place to describe the actions that must take place in the event of an internal or external complaint as well as in case of environmental incidents. A dedicated telephone line is available all hours of the day to allow stakeholders to complain. Complaints are captured on a standardised form and are followed by an investigation. The average feedback time on a complaint is less than two hours and aims to provide feedback within 30 minutes. Complaints can be made anonymously and all complaints have been captured in a record of complaints, starting 1994.

Monthly community workgroup meetings are also held, during which complaints can be raised and feedback as well as additional information distributed to the community.

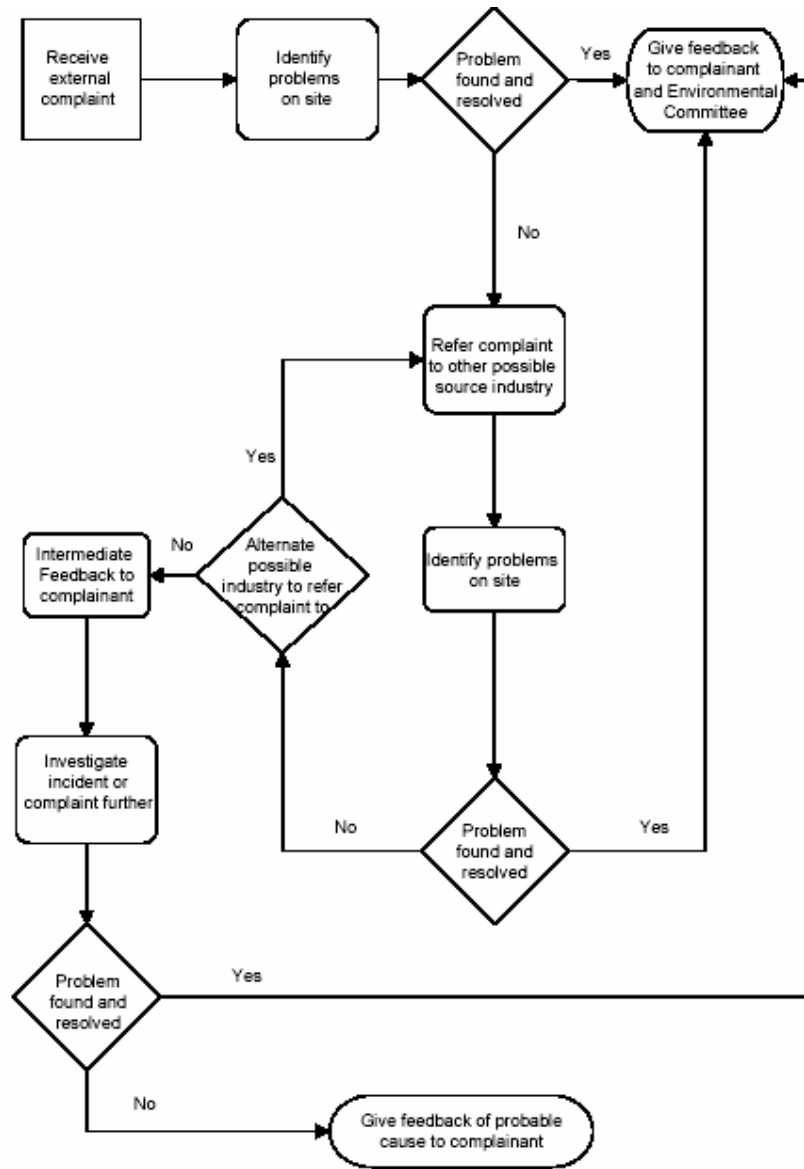


Figure 4-9: Inter-company External Complaint Response Procedure

4.2.1.1.3 Analysis of Complaints

Internal and external complaints for the period starting July 2001 and ending January 2004 have been analysed. There were 360 complaints in total, 70.28% thereof were internal complaints, while the other 29.72% were external complaints. All of the external complaints were classified as social in nature, with 76.64% thereof pure sensory stimuli complaints and an additional 14.02% sensory stimuli health related complaints. Since the complaint register contained data of possible root causes responsible for the complaints, the aspect was also analysed. Figure 4-10 shows the distribution of social complaints between the various main criteria as well as the breakdown of these complaints by possible sources that could have caused the condition causing the complaint.

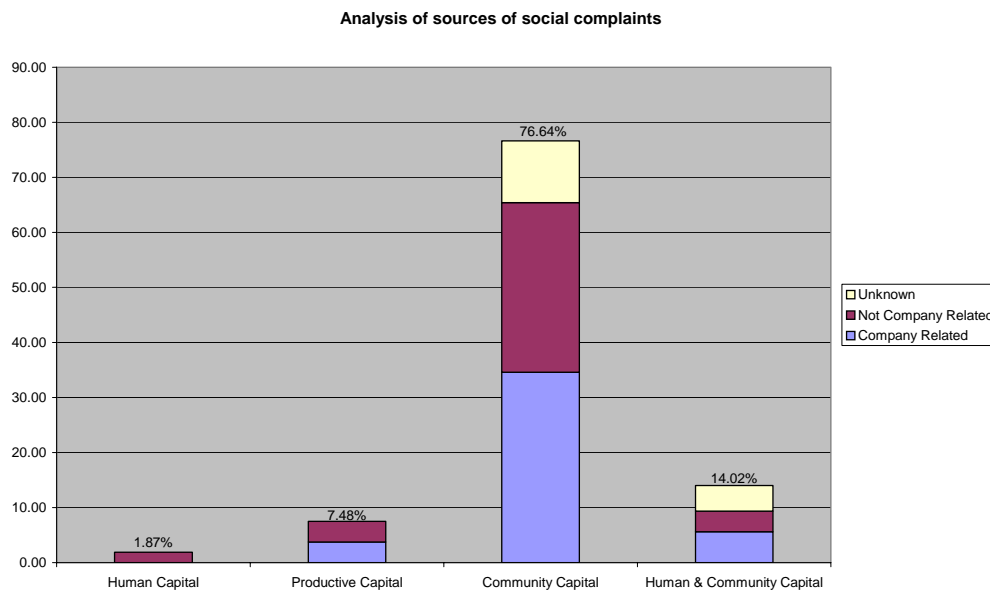


Figure 4-10: Analysis of Sources of Social Complaints

Figure 4-10 clearly indicates that 40% of all external complaints received have not been related to any of the company's activities. The main reason for not finding the source of approximately 16% of the complaints is the time lag between the incidents and reporting thereon. The sensory stimuli external complaints have been analysed further (see Figure 4-11). Odour seems to be the main reason for social complaints, since approximately 80% of all external complaints are about odour, with 15% thereof also stressing the health impacts of the odour, e.g. burning eyes, throat and chest irritations.

Analysis of Complaints about Sensory Stimuli

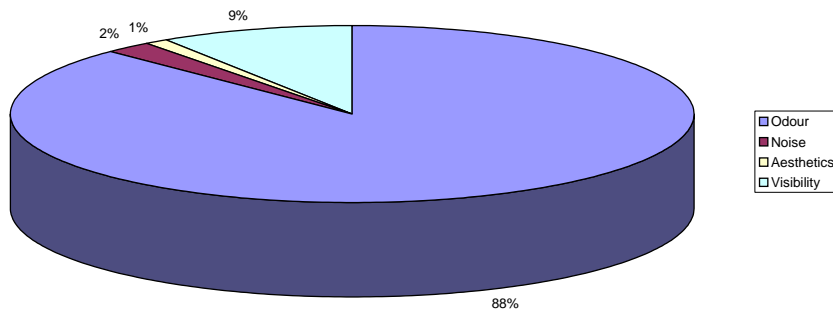


Figure 4-11: Analysis of Complaints about Sensory Stimuli

The detailed nature of the complaint register made it possible to analyse the company’s reaction to external complaints. All of the external complaints have been investigated thoroughly with various outcomes (see Figure 4-12). In case of a once off problem or a sensory stimuli problem due to a specific weather condition, no corrective action was taken. In all instances where action was taken, the actions focused on replacing equipment.

External Complaints: Outcome of Investigations

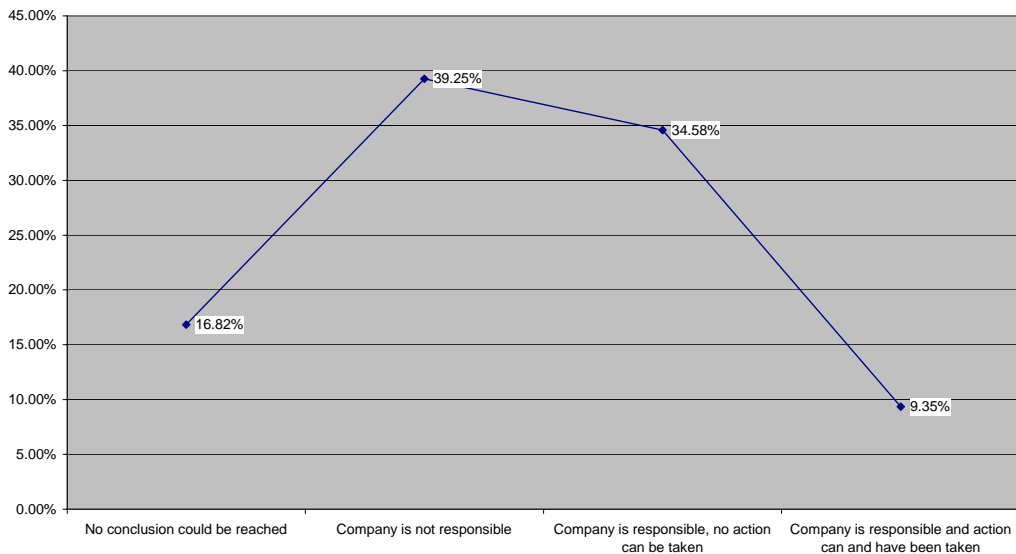


Figure 4-12: Analysis of External Complaint Investigations

The internal complaints have also been analysed. Social incidents accounted for 45% of all internal complaints, with 37% of complaints being environmental incidents. The social complaints concerned mainly employment practices and working conditions (88%). The majority of these concerns related to odour in the workplace. The other 12% of social complaints dealt with health issues due to odours.

It can therefore be concluded that most of the internal and external complaints related to the facility's impact on people's sensory stimuli, with odour being the biggest single-issue complaint. The company is busy implementing a project to address the odour problem. Odour related complaints are therefore expected to decrease dramatically.

All of the complaints analysed dealt with aspects accounted for in the proposed sustainable development framework. The secondary impact of the 37% of internal complaints regarding environmental incidents were, however, not analysed. Secondary impacts of these incidents can relate to productive capital of society, for example transport incidents influencing the mobility infrastructure, while spillages can influence service infrastructure. Nevertheless, the company implemented sufficient procedures to respond to these incidents. The impacts are also mostly short-term.

4.2.1.1.4 Community's Perception of the Complaint Process

A questionnaire to evaluate the community's perception on the complaint process was distributed at one of the monthly community workgroup meetings. Sixty community members completed the questionnaire. The group mainly represented citizens of one of the nearby towns. Thirty-one of the respondents (51.67%) indicated that they have complained to the company before. The frequency of these complaints is shown in Figure 4-13.

The fact that 38% of the respondents indicated that they use the monthly meeting to raise complaints adds further weight to the frequency response. The other most popular method of complaining was via the telephone (27% of the respondents).

Twenty-eight of the 60 respondents (47%) indicated that they were aware of the dedicated telephone line to complain, but only 12 individuals (20% of the whole group and 39% of people who have complained to the company before) have used this service in the past. The response time of the people who has used the telephone line is shown in Figure 4-14. The large majority of no responses can be ascribed to public telephones being used to complain from. No contact number is therefore provided.

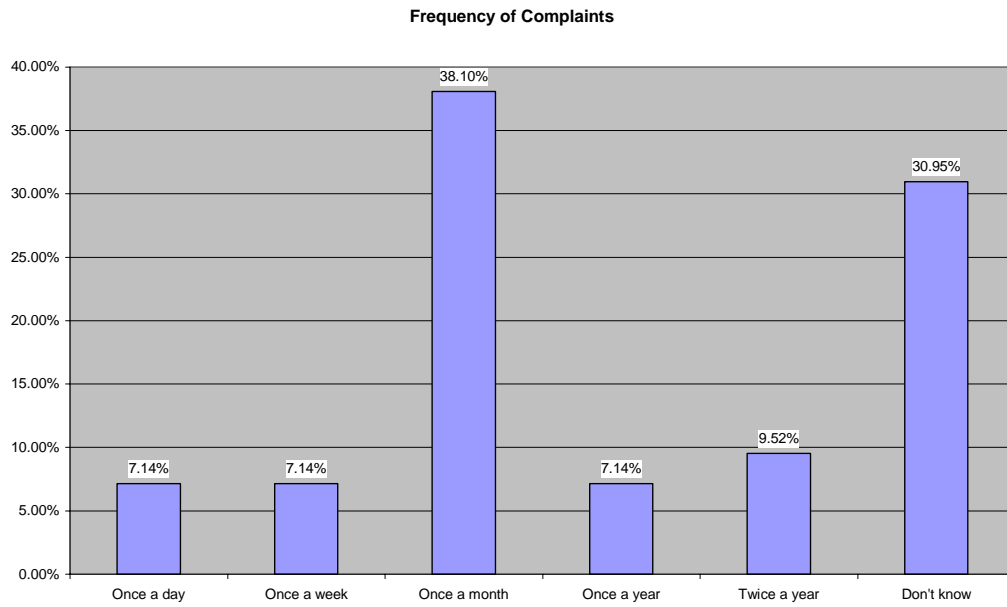


Figure 4-13: Frequency of Respondents' Complaints

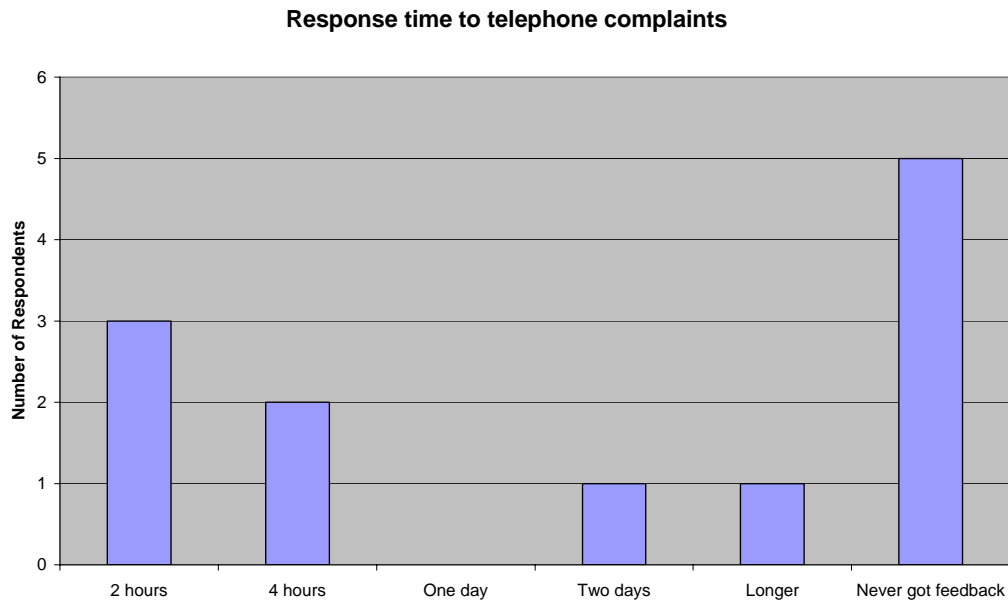


Figure 4-14: Response time of telephone complaints.

When asked what their major complaints were, responses were as follows:

- eight respondents (13%) did not answer the question;
- three respondents (5%) indicated that they had no complaints;
- four respondents (7%) listed complaints regarding the local government; and
- forty-five respondents (75%) listed company related complaints.

The responses from the last 45 respondents were analysed and are depicted in Figure 4-15.

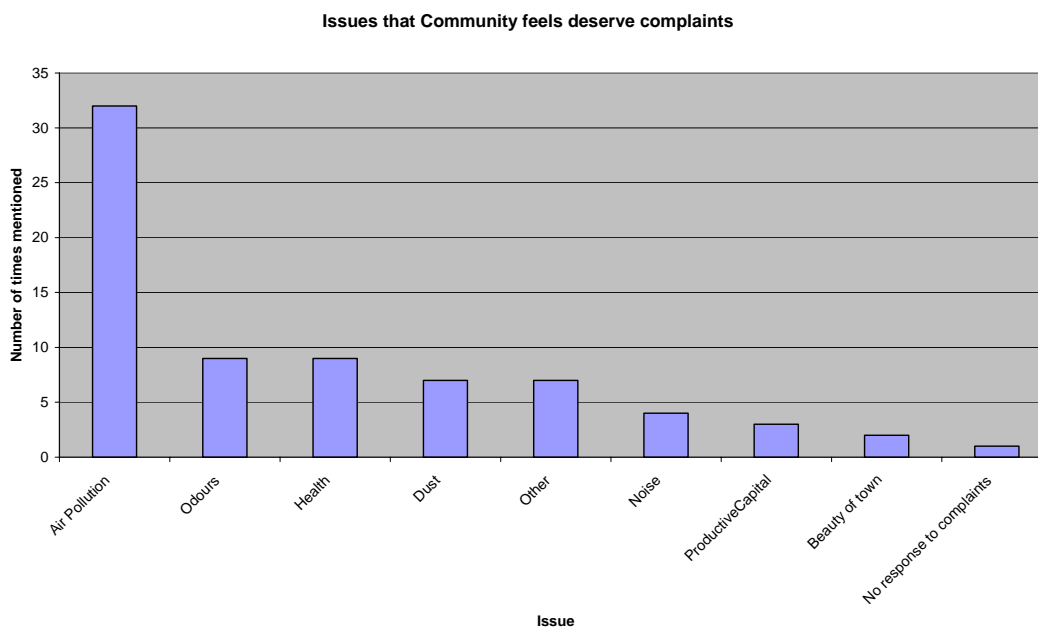


Figure 4-15: Major Complaints According to Respondents

The community sources of complaints are similar to the analysis of the complaints in the complaint register. The questionnaire clearly indicated that the monthly community workgroup meetings are fulfilling an important role in ensuring effective communication between the company and the community. Another conclusion reached is that telephone lines might not be the most effective complaint mechanism for the specific community group. The company indicated that other complaint mechanisms were made available, namely an additional complaint register at the community hall.

4.2.1.2 Chemical Facility in South Africa in the Mpumalanga Province

4.2.1.2.1 Background Information

The chemical facility is located on a 6798 Ha industrial site in the Mpumalanga Province. The construction of the site started in the early 1970s and was finished in 1980. The chemical facility manufactures diverse solvents, fuel alcohol, petroleum gases, polifins, alpha olefins and other chemical products. The facility contributes 13% to the geographic economy of the region [252].

4.2.1.2.2 Complaint Process

The plant has a toll-free telephone number that community members can phone to log complaints. All internal and external complaints are captured within the record of complaints and the aim is to provide feedback within 24 hours. A formalised data storage system is used to capture complaints. All individual divisions have access to the system. Complaints can be made anonymously.

4.2.1.2.3 Analysis of Complaints

Internal and external complaints as well as incident reports for the period starting 31 January 2000 and ending 31 January 2004 were analysed. In total, 508 complaints and incidents have been analysed, 47% of which was internal in nature, 48% external and 5% maintenance related.

The analysis of the external complaints indicated that 98.8% of all external complaints could be classified as complaints about social aspects, with the remaining complaints all dealing with environmental issues or alerts. The sources of the social complaints have been classified according to the proposed framework (see section 4.2.1.1.3 for definitions). Figure 4-16 illustrates this classification. The majority of complaints are caused by community capital being endangered, specifically the sensory stimuli. The majority of sensory stimuli complaints dealt with odours (96%), with the remaining 4% dealing with aesthetics.

Most of the internal complaints could be classified as dealing with environmental aspects (64%). Of the remaining complaints, 20% dealt with social aspects, specifically sensory stimuli aspects influencing working conditions. The last 16% of internal complaints were classified as other, since it dealt with maintenance issues and are more of an information sharing nature than a true complaint.

Similar to the chemical facility in the Free State province, most external complaints dealt with sensory stimuli aspects, while internal complaints seemed to focus on environmental aspects. These complaints' possible secondary impacts have not been analysed.

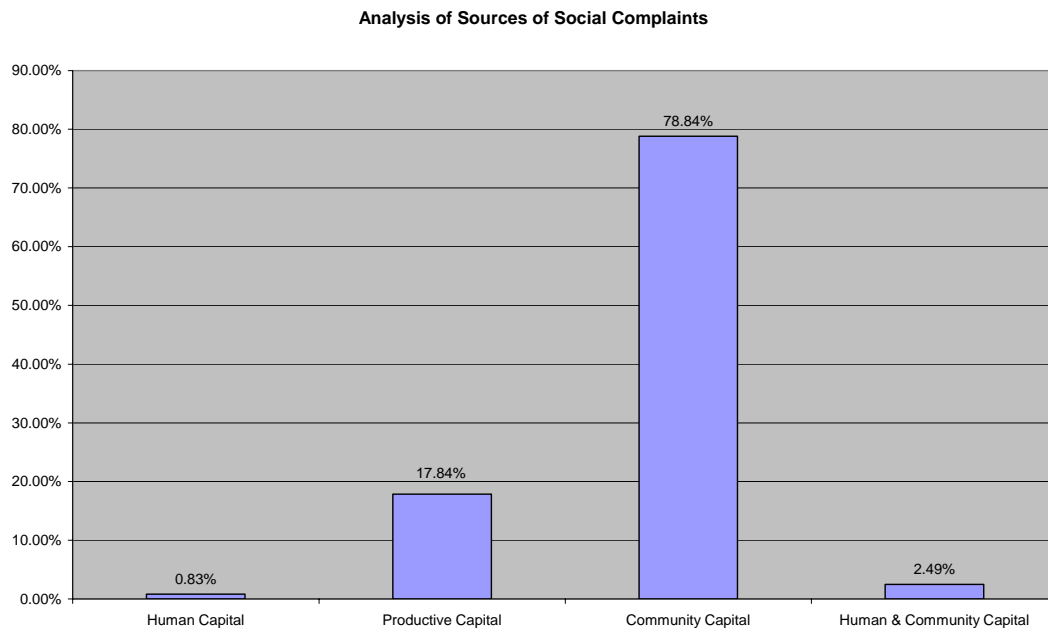


Figure 4-16: Analysis of Sources of Social Complaints

Since the information made available did not include follow-up actions or complainants' names, the aspects were not analysed or studied.

4.2.1.3 Chemical Facility in North America

4.2.1.3.1 Background Information

The chemical facility is located on a 400 acre industrial site in southwest Louisiana. Approximately 280 acres is used for the six manufacturing units and support buildings. The first unit on the site reached operational status in 1961. The complex manufactures seven product lines and employs approximately 450 permanent employees and between 150 and 200 contractors. It is one of the top five industrial employers in southwest Louisiana and the facility's economic impact on the region is estimated to be \$110 million annually.

The facility initiated their community information and complaint line in 1992. The community complaint line once handled an average of 120 complaints per year. After two voluntary projects that reduced community impacts, these complaints have been reduced to an average of two per month.

4.2.1.3.2 Complaint Process

The facility does not handle internal and external complaints in the same way. External complaints can be made anonymously. One of the following mechanisms can be used to complain:

- a 24-hour call line, which is promoted in the community by means of refrigerator magnets and listings in telephone books;

- through the website;
- by writing a letter to the company, and
- Community Advisory Panel (CAP) meetings.

Community complaints coming through the call line are captured in a database. Initial response is given to the complainant within 20 minutes and where an investigation is required, follow-up feedback is provided within two days. The process is shown in Figure 4-17. Complaints in writing and those made through the website are handled in the same manner. Complaints made during a CAP meeting are either addressed in the meeting or if a more thorough investigation is required, feedback is given at the next CAP meeting. CAP meetings are held once every other month.

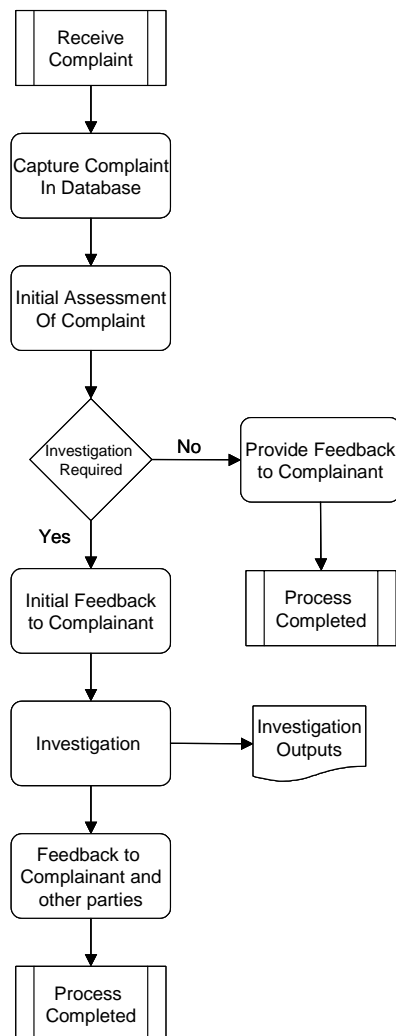


Figure 4-17: Complaint Process

There are a variety of mechanisms in place to accept and address facility internal complaints. These are:

- direct complaints to supervisors;
- direct complaints to union representatives;

- complaints through the community services office; and
- the intranet's "Ask the President" option.

The union representatives can address the complaints received at the monthly union/management safety committee. If the nature of the complaint is not health and safety related, the union can handle the complaint in the following three ways:

- general discussions between union and management;
- initiating a grievance procedure; or
- initiating contract negotiations.

All health accusations, whether through internal or external complaints, are, however, handled through a regulatory process.

4.2.1.3.3 Analysis of Complaints

The internal complaints are not captured in one central database. Analysing these complaints would therefore be very anecdotal. The analysis thus focuses merely on external complaints. In total, 117 complaints for the period starting January 1999 and ending October 2003 have been analysed. Of those complaints, 91% can be classified as social in nature, with 9% classified as other. The complaints classified as other mostly deals with requests for information regarding property purchases of the company in the local community. Of the complaints regarding a social nature, 99% belonged to the community capital criterion and its sub-criteria. The other 1% was classified as mobility infrastructure, since it dealt with accidents on roads maintained by the company. A total of 99% of the community capital complaints, which equals 90% of all external complaints, are classified as sensory stimuli complaints. The nature of these complaints have been analysed further and are summarised in Figure 4-18.

It can be concluded that most of the external community complaints are on the facility's impact on the community's sensory stimuli. Except for the specific complaints about property purchases of the company, all other social complaints could be analysed within the proposed sustainable development framework.

The community's complaints influenced company operations to such an extent that voluntary projects were undertaken. It is also evident that the complaints about sensory stimuli decreased dramatically after the voluntary projects that changed the flaring operations. In 1999, 34 complaints dealing with sensory stimuli were lodged, mostly about flaring operations. In 2003, three complaints dealing with sensory stimuli were lodged. Not one of these complaints dealt with flaring operations.

Analysis of Complaints about Sensory Stimuli

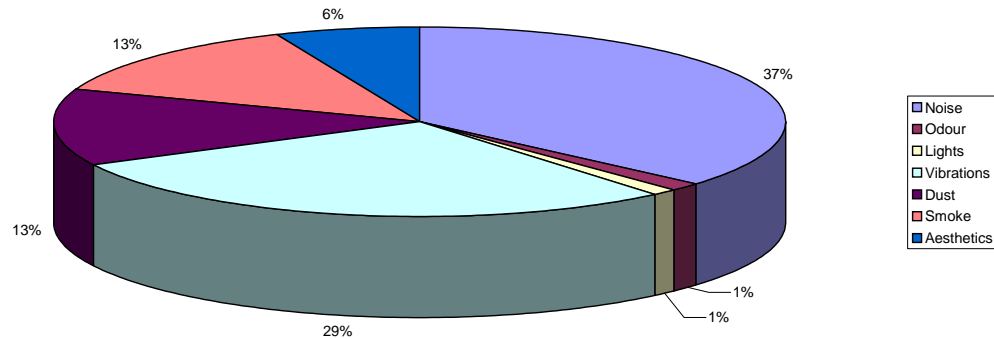


Figure 4-18: Analysis of Complaints about Sensory Stimuli

Unfortunately data regarding actions taken due to complaints was not available for analysis.

4.2.1.4 Chemical Facilities in Germany

4.2.1.4.1 Background Information

The company has five production facilities in Germany, where fatty alcohols, inorganic speciality chemicals, such as high purity aluminas, oxygenated solvents and a variety of oleochemical products, are manufactured. Some of these facilities date back to the early 20th century, with the youngest facility starting production in the 1960s. The company is signatory of Responsible Care®¹⁰ and sustainable development is a priority throughout their activities.

4.2.1.4.2 Complaint Process

Complaints can be made 24 hours a day and are mostly captured in a logbook by the Fire Department. The public can use designated telephone lines to complain. The emission commissioners, specialising in waste, safety and water, are responsible for investigating complaints. Depending on the nature of complaints, feedback is given immediately or within an hour. Complaints can also be made directly at the relevant authorities. Legal requirements stipulate that the company must report on complaints annually.

¹⁰ Responsible Care® is a worldwide initiative by the chemical industry, which strives to improve performance in safety, health and the environment within individual companies as well as the larger industry.

Internal complaints are captured in a central system, i.e. SAP, which have already been installed at two of the five production facilities.

4.2.1.4.3 Analysis of Complaints

The company distinguishes between valid and invalid complaints. Complaints are regarded as valid if:

- the investigation indicates that the company is responsible for the cause or source of the problem being complained about; and
- if the company is exceeding its legal emission limits when the cause of the problem is emission related.

In the 2002/2003 financial year, the company had four valid complaints, which were all noise related. Additional complaint information was not available for analysis. Company personnel were, however, interviewed. Most complaints received dealt with sensory stimuli aspects, especially with noise, odour and light from flaring operations. The company also reports emission information directly to government.

It is evident that complaints are not as numerous as in South Africa. This might be due to the long history of environmental legislation in Germany (the legislation dates back to 1489). Compliance is also audited more stringently. This could result in a better-informed public with more trust in government permits.

4.2.2 Analysis of Sustainable Development Reports

Eight sustainable development reports have been analysed to determine the scope of issues reported on. Four South African companies were chosen as well as four international companies with business operations in South Africa. The Financial Mail's Top Companies 2002 report was used to choose the South African companies. The four top companies based on turnover, excluding financial institutions, have been chosen. These companies are Billiton, Anglo American, Sasol and Sappi [109]. The 2003 Fortune list of most admired companies were used to choose the international companies. Due to the process industry focus of this document, two companies in the chemical division and two companies in petroleum refining division were chosen. These companies are Dow Chemical, Bayer, BP and the Royal Dutch/Shell Group [253].

All of the companies except Sappi have published sustainability or environmental, health, and safety reports or societal reports. The following seven reports were analysed:

- BP Environmental and Social Review - 2002 [254];
- The Dow Global Public Report - 2002 [255];
- The Shell Report - Meeting the Energy Challenge - 2002 [256, 257];
- Anglo American Report to Society - Towards Sustainable Development - 2002 [258];

- BHP Billiton Health Safety Environment and Community Report - Policy into Practice - 2002 [259];
- Sasol Sustainable Development Report - Share it with Sasol - 2002 [260]; and
- Bayer Sustainable Development Report - 2001 [261].

Except for the Bayer report issued in 2001, all reports were issued in 2002. This was the most recent report released by Bayer at the time of the analysis. Table 4-5 shows the social indicators reported on.

Table 4-5: Analysis of Seven Sustainable Development Reports

ANALYSIS OF SUSTAINABLE DEVELOPMENT REPORTS								
Question Number	Name of Company	BP	Dow	Shell	Anglo American	Billiton	SASOL	Bayer
1	Annual Turnover (\$ Million)	180186	27609	235398	15 145	17778	5996	27101 *
2	Number of Employees	115250	50725	116000	127000	51000	31100	116900
3	Are social performance indicators used?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	List of indicators found in reports:							
	Company Internal / Company Practices							
	-Number of Employees	x	x		x	x	x	x
	-Diversity Profile of workforce by gender and nationality	x	x	x	x	x		
	-Non discrimination facts e.g. percentage of previous disadvantaged people in management			x	x		x	
	-Number of Fires, explosions and releases						x	x
	-Number of Leaks, breaks and spills						x	x
	-Indicators with regards to Health & Safety e.g. fatal accident rate, number of fatalities, lost time injury frequency, recordable case rate	x	x **	x	x	x	x	x
	-Indicators with regards to Wages		x	x	x	x		
	-Indicators with regards to Child labour			x		x		
	-Indicators with regards to Contracting and Procurement			x				
	-Indicators with regards to worker training e.g. training hours or training expenses		x		x			x
	-Indicators with regards to dismissals or staff turnover and reasons why	x			x			
	-Indicators with regards to ethics e.g.number of ethic workshops	x	x					
	-Indicators with regards to Union and staff - membership, involvement and forums and grievance procedures			x	x			
	-Indicators with regards to worker empowerment and internal complaints		x				x	
	- Indicators with regards to the use of Security Personnel			x				
	- Indicators with regards to Research & Development Expenditure					x		
	- Indicators with regards to accreditations	x		x	x	x	x	x
	Society							
	-Indicators with regards to community outreach forums						x	
	-CSI Investment/Community Spending	x	x	x	x	x		
	-Public Favorability Scores							
	-Indicators with regards to Transportation Incidents							x
	-Number of External Complaints					x	x	
	-Indicators with regards to economic distribution to regions, or taxes or by type		x		x	x		
	- Indicators with regards to Political payments, competition cases and bribery cases			x				

* Turnover is equal to €30275, the average \$/€ exchange rate for 2001 was used to do a conversion (\$1 = €1.1171) [178]
 ** The key performance indicators were listed under the environmental dimension of the report.

Where possible, the social indicators reported on have been associated with criteria in the proposed sustainability assessment framework (see Table 4-6). It is evident that sustainability reports have a strong internal focus and reports extensively on the internal HR criterion and its sub-criteria. The external dimension is, however, not really reported on and most external indicators focuses on corporate social investment or environmental related issues, e.g. road incidents. Two additional criteria have been found in literature on which companies are encouraged to report, namely:

- enforcement; and
- monitoring.

The GRI guidelines [60] have a section on indicators to report on suppliers’ performances, which can be linked to enforcing environmental standards down the supply chain. In addition, companies take

part in various monitoring activities (see section 3.4.4.2) during the operation phase, which are currently not accounted for in their sustainable development reports.

Table 4-6: Matching Indicators and Criteria

Indicator	Criterion Involved
-Number of Employees	Employment Opportunities
-Diversity Profile of workforce by gender and nationality	Equity
-Non discrimination facts e.g. percentage of previous disadvantaged people in management	Equity
-Number of Fires, explosions and releases	Health & Safety Incidents
-Number of Leaks, breaks and spills	Health & Safety Incidents
-Indicators with regards to Health & Safety e.g. fatal accident rate; number of fatalities; lost time injury frequency, recordable case rate	Health & Safety Incidents
-Indicators with regards to Wages	Employment Compensation
-Indicators with regards to Child labour	Labour Sources
-Indicators with regards to Contracting and Procurement	Economic Welfare
-Indicators with regards to worker training e.g. training hours or training expenses	Career Development
-Indicators with regards to dismissals or staff turnover and reasons why	Employment Stability
-Indicators with regards to ethics e.g.number of ethic workshops	Employment Practices
-Indicators with regards to Union and staff - membership, involvement and forums and grievance procedures	Selected Audience
-Indicators with regards to worker empowerment and internal complaints	Stakeholder Influence
- Indicators with regards to the use of Security Personnel	Disciplinary & Security Practices
- Indicators with regards to Research & Development Expenditure	Research & Development
- Indicators with regards to accreditations	Health & Safety Practices
Society	
-Indicators with regards to community outreach forums	Collected Audience
-CSI Investment/Community Spending	N/A
-Public Favorability Scores	N/A
-Indicators with regards to Transportation Incidents	Mobility Infrastructure
-Number of External Complaints	N/A
-Indicators with regards to economic distribution to regions, or taxes or by type	Economic Welfare
- Indicators with regards to Political payments, competition cases and bribery cases	Regulatory & Public Services

4.2.3 Conclusion

All social aspects which manifested in the case studies and archival analysis could be classified into the criteria framework. The social aspects identified by the analysis are shown in Figure 4-19. It appears that some criteria manifest more strongly in the phase, especially the Internal Human Resources criterion and its sub-criteria.

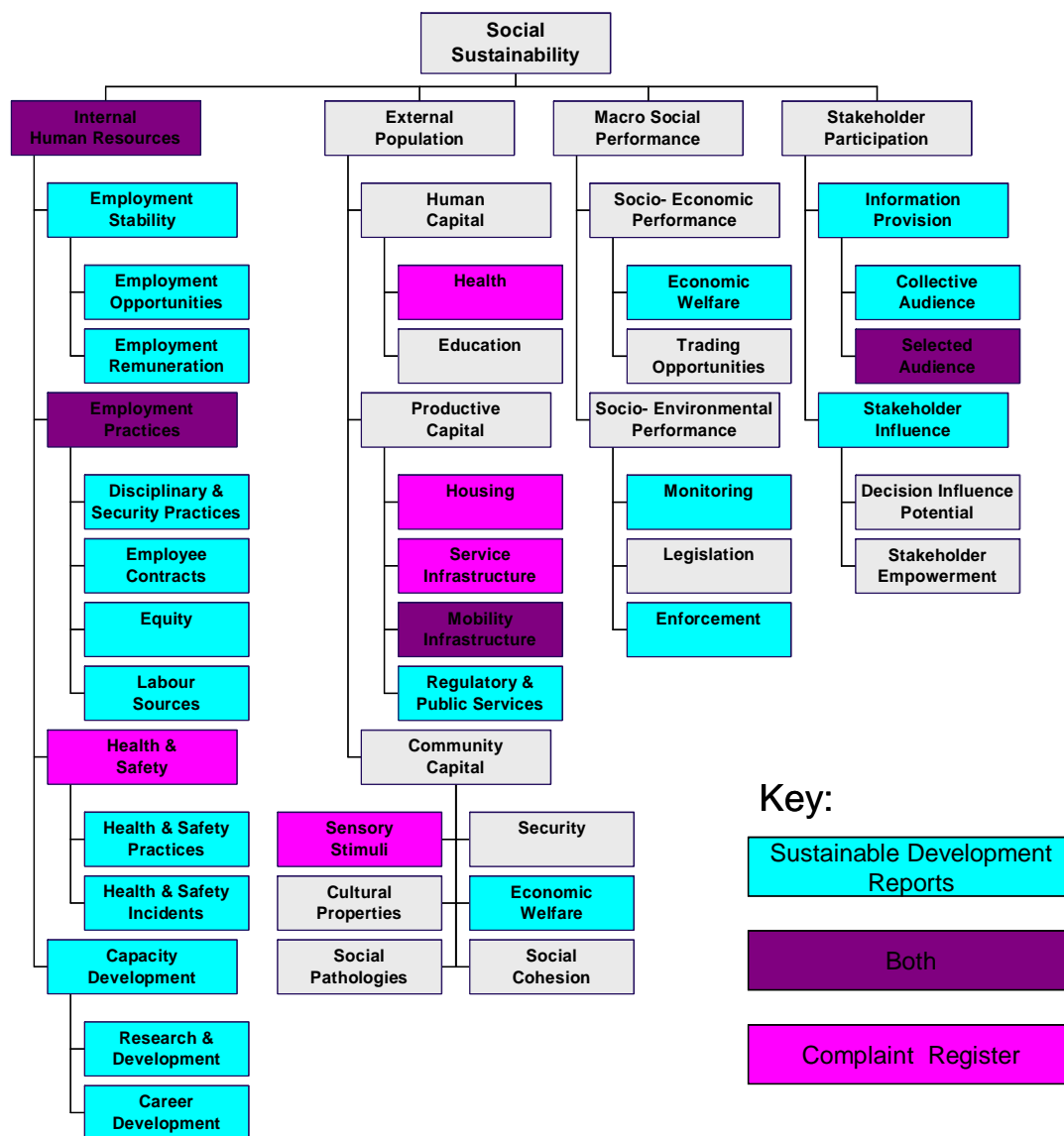
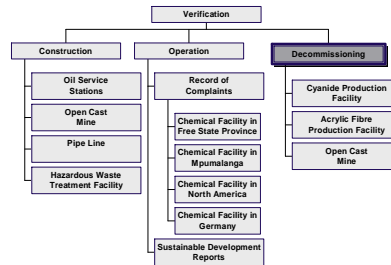


Figure 4-19: Social Aspects relevant in Operational Phase

4.3 Framework Verification Part 3: Decommissioning Phase

“The social impacts of decommissioning begin when the intent to close down is announced and the community or region must again adapt, but this time to the loss of the project or an adjustment to policy change. Sometimes this means the loss of the economic base as a business closes its door.”[162]



The unit of analysis for this part is the decommissioning and rehabilitation of an operational initiative. Decommissioning and rehabilitation are normally undertaken as a project. Three decommissioning projects or sites are studied, namely:

- a cyanide production facility - the production facility has been active for nearly 65 years and has changed ownership a few times during its life. The decommissioning followed its main customer closing down;
- an acrylic fibres production facility - the production facility operated for nearly ten years before economic reasons forced the facility to close; and
- an open cast mine - the mine operated for 14 years before it became uneconomical to continue mining the reserves.

These sites are chosen for the following reasons:

- the cyanide production facility is a decommissioning project within an industrial area and represents an example of the decommissioning of relative small industrial facility;
- the acrylic fibres production facility is a decommissioning project within a problematic social area; and
- the open cast mine decommissioning is chosen due to the extensive nature of social impacts associated with mine closures as well as the increase attention in South Africa on decommissioning of mines [262].

The background of each facility is discussed below, after which social aspects that manifested in the project or became problematic are classified in terms of the proposed social framework.

4.3.1 Cyanide Production Facility in Mpumalanga

4.3.1.1 Background on Production Facility

In 1937, a site in Emalahleni, Mpumalanga province was developed for producing Calcium and Sodium Cyanide (Aero Brand Cyanide), which are used in the gold extraction/processing industry. Various additional facilities were developed on the site in the period 1937 until 1983, namely:

- additional cyanide furnaces in 1956, 1976 and 1983;
- production facilities for Calcium Cyanamide in 1953 - 1956;

- production plant for insecticides in 1951;
- fermentation plant for the production of antibiotics (tetracyclines) in 1964;
- fermentation plant for the production of Ethambutal in 1977; and
- additional production plants in 1971, 1973 and 1974.

In the beginning of 1993, the site was sold to new owners. At that time, only the Aero Brand Cyanide plant was still in production. The remaining plants had been decommissioned. The workforce of 700 had thus been gradually reduced to 140.

4.3.1.2 Background on Cyanide and Cyanide Market in South Africa

Calcium Cyanide ($\text{Ca}(\text{NC})_2$) is manufactured through a chemical process with main raw material Calcium Cyanamide and rock salt. The process is a dry process and does not require any water. Calcium Cyanide is mainly used in the gold extraction and processing industry. The main clients of the manufacturing facility were a mine in Zimbabwe and East Rand Gold and Uranium (ERGO). ERGO, who buys 95% to 99% of all production, uses the Calcium Cyanide in their core process, which is recovering gold from old gold-mine tailings. In July 2004, ERGO started depleting the last of its payable reserves and expected to cease operations at the end of 2004. In June 2002, the decision was taken to decommission the cyanide production facility, rehabilitate the site and sell the whole site by June 2004. This decision was economic based, given the declining market for the end-product.

4.3.1.3 Social Issues Relevant to the Project

South African law does not require completion of an EIA or social impact assessment study when a plant is decommissioned. Figure 4-20 identifies the social aspects relevant to the decommissioning project.

a) Employment Opportunities

A major social impact of any decommissioning project is the loss of employment opportunities. In June 2002, the production facility had approximately 140 employees working in three shifts. These shifts were gradually reduced to one shift. In June 2003, approximately only 40 employees were left. At the end of December 2003, the last employees left the site. Some of the 140 employees resigned. In the end, 91 employment opportunities were made redundant and the redundancies were dealt with in three ways, namely:

- 4.4% of the employees retired and are enjoying full pension benefits;
- 92.3% of the employees were offered retrenchment packages; and
- 3.3 % of the employees were transferred to other operations of the company in another town and/or province in South Africa.

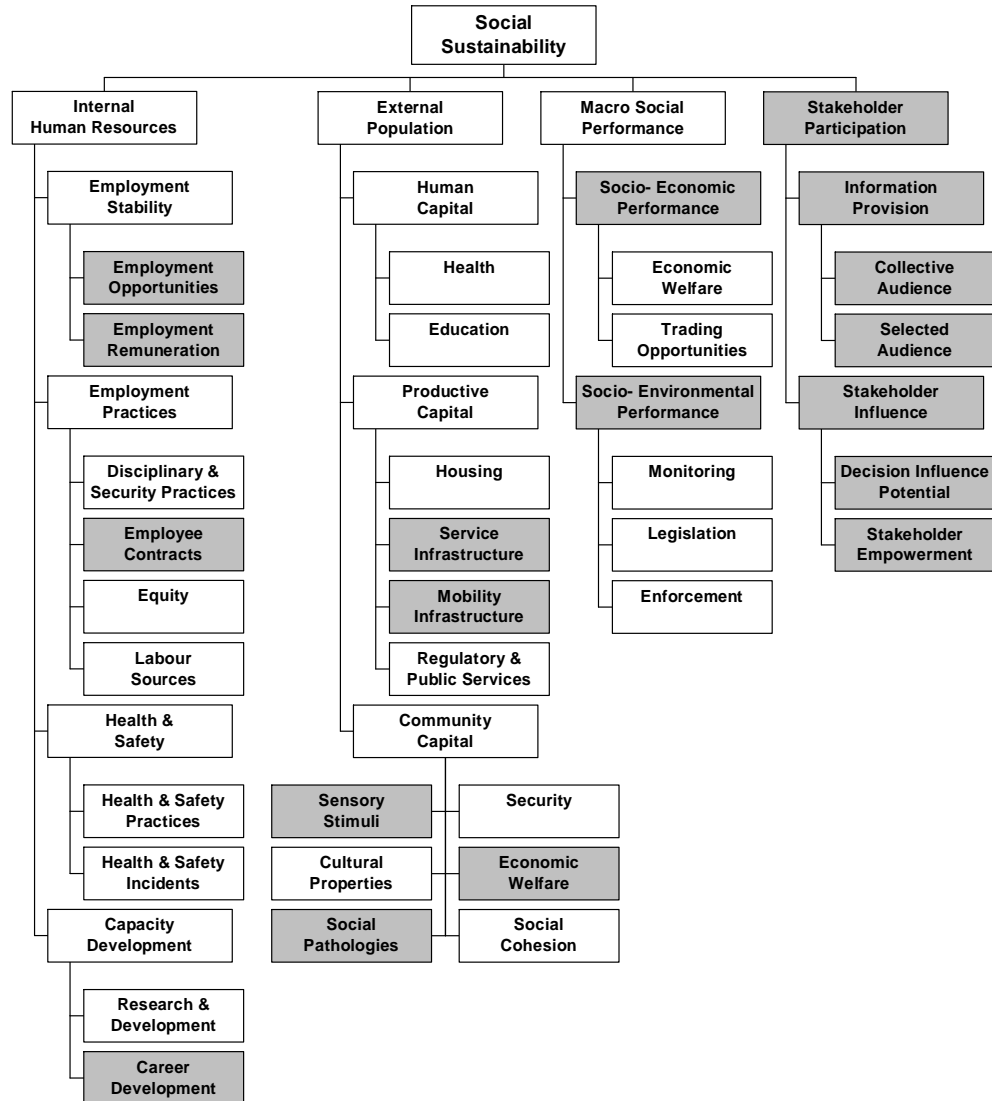


Figure 4-20: Social Issues Relevant to the Decommissioning of the Cyanide Plant

b) Employment Contracts and Employment Remuneration

Employment contracts had to be terminated. Retrenchments happened in four intervals, with workers receiving four months notice in each case. Retrenchment packages were paid to employees.

c) Career Development

The company did assessments in terms of prior learning and registered some employees under the skills development programme of the Chemical Industries Education and Training Authority (CHIETA). All employees were also offered an opportunity to undergo external skills training to become more marketable.

d) Service Infrastructure

The production facility used on average 861MWh of electricity a month. That constitutes 0.017% of the total electricity usage in Emalahleni. Since the production process is a dry process and no water was required, the water usage was minimal, i.e. approximately 200m³ per month. The decommissioning of the facility thus resulted in a small quantity of electricity and water available for monthly use. The quantities did, however, not result in the closure of facilities and is therefore not a negative impact.

e) Mobility Infrastructure

The decommissioning of the facility had no drastic influence on Emalahleni's mobility infrastructure. The facility mainly relied on railway transport to transport their products. The only other burden on the mobility infrastructure was transporting employees to and from the facility. During the decommissioning process, there might have been an additional burden on the mobility infrastructure with the transportation of material necessary for rehabilitation. However, all of these burdens are negligible compared to the burdens other facilities in the industrial area place on the mobility infrastructure.

f) Sensory Stimuli

The closure of the chemical plant resulted in a positive impact on sensory stimuli. Since the plant was situated in an industrial area and had minimal air pollution affecting sensory stimuli, the positive impact is negligible.

g) Economic Welfare

The retrenchments raised Emalahleni's unemployment rate from 24.99% to 25.04%. The decommissioning thus influenced the local community's economic welfare. The company also no longer pays local taxes, which will indirectly influence the community's economic welfare.

h) Social Pathologies

The occurrence of social pathologies in an area is related to the area's unemployment rate. The increase in unemployment therefore influenced the occurrence of social pathologies in the Emalahleni area. Since no detailed study was undertaken, the information is not available to comment on the scale of this impact.

i) Socio-Economic Performance

The production facility had a monthly turnover of between R4 and R10 million. It contributed less than 1% to the annual turnover of the company that bought it in 1993, and 0.15% to the province's Gross Domestic Product (GDP). The decommissioning of the facility thus had a negligible impact on the region's social economic performance. The closure might have had an influence on the suppliers of raw material but no information was available to analyse the impact.

j) Socio-Environmental Performance

The production facility participated in air quality discussions on a cross-industry and regional level. Nevertheless, the facility's contribution to macro environmental performance was negligible due to their size and the relative small impact of their operations. It can therefore be assumed that the decommissioning would also have had a negligible impact on social environmental performance.

k) Information Provisioning

The decision to decommission the facility was communicated to the employees as well as the facility's suppliers. The communication started in February 2002. The impact on the larger community was viewed as insignificant. The larger community was therefore not specifically targeted to be informed of this decision.

l) Stakeholder Influence

The decision to close the facility was a purely economic decision, since it would not have been viable to keep the facility open after ERGO closed down. It can thus be said that the facility's customers influenced the decision to decommission. No other stakeholder groups was, however, involved in the decision-making process.

4.3.2 Acrylic Fibre Plant

4.3.2.1 Background Information

In the early 1990s, the Industrial Development Corporation of South Africa (IDC) and an industry partner entered into a 50:50 partnership to establish an acrylic fibre plant in South Africa. The decision was based on the fact that no such plant existed in South Africa, while the raw material for such a plant, Acrylo Nitrile (ACN), was available from local suppliers. The partners chose Ethekwini in the KwaZulu-Natal province of South Africa as the location for the plant, since the fibre and textile industry is strongly based in and around Ethekwini. This strategic choice meant, however, that the plant was more than 600 km away from its raw material suppliers.

A second-hand plant of Courtaulds PLC of the United Kingdom (UK), which operated in Calais, France, was dismantled and relocated to a 10 hectare site in the environmentally sensitive Durban South basin. The industry partner managed the construction project and brought in experts from Europe to assist with the commissioning. The plant had a production capacity of 36,000 tonnes per annum and operated four production lines. It was the only acrylic fibre producer in Africa and employed 250 people. Members of the initial construction project team stayed on in the operational phase. The plant became operational in 1993 and operated within the relative legal limits. In 1999, the company received ISO 14001 as well as ISO 9002 certification and by 2000 the company had a four-star safety rating from the National Occupational Safety Association (NOSA).

The decision to decommission the plant was taken in February/March 2002. The plant produced its last products in May 2002, which were sold in August 2002. The plant was dismantled and the site cleaned by March 2003.

4.3.2.2 Reasons for Decommissioning

In 2000, the raw material supplier decided to decommission their ACN plant, which forced the company to start importing the raw material. The ACN market was, however, extremely volatile, with prices increasing from \$315 per ton to \$960 per ton. In addition, the local demand for acrylic fibre decreased from 40,000 tons per annum in the early 1990s to 13,000 tons per annum in 2000, while the international acrylic fibre market was experiencing an over-supply. The company also did not enjoy protection from duties on imports. Since the plant's start up, it struggled to return a net profit after depreciation. In 2000, the company started making cash losses.

In March 2001, the industry partner confirmed its intention to exit from the partnership, but agreed to allow the IDC to investigate alternative options to keep the company alive. The IDC tried finding a suitable strategic partner for replacement and negotiated with four international groups. The IDC also investigated the option of converting the plant to produce carbon fibre instead. The negotiations did not advance much, as all the parties indicated that successful application for import duty protection would be a pre-requisite for becoming strategic partners. The IDC applied for import duty protection on behalf of the company, but the application was rejected.

In February 2002, both partners agreed to dissolve the partnership, dispose of the assets and to decommission the plant and rehabilitate the site. Soon after this decision, the SACTWU Investment Group made an offer to buy the company, subject to the IDC providing funding. In March 2002, the group's proposal was rejected. In April 2002, a structure for decommissioning and closing the plant was approved. The structure stated that the company management, together with five workgroups, would be responsible for executing the closure plan. The five workgroups were dedicated to specific areas, namely legal, financial, technical, labour and environmental.

4.3.2.3 Social Issues Relevant to the Project

The possible social consequences have been classified. The social aspects identified as relevant in the decommissioning project are illustrated in Figure 4-21.

a) Employment Opportunities

The plant employed 250 employees [263] and the decommissioning thereof resulted in the loss of most employment opportunities. The current employees were, however, responsible for dismantling the plant. The loss therefore occurred rather gradually over the period of the decommissioning project. The industry partner relocated less than 5% of the workers to other existing employment opportunities. The low relocation percentage can be ascribed to the lack of open employment opportunities within the

industry partner’s operations at that time. The industry partner’s other operations are also located more than 600 km away from Ethekwini. Approximately 4% of the employees accepted the early retirement option.

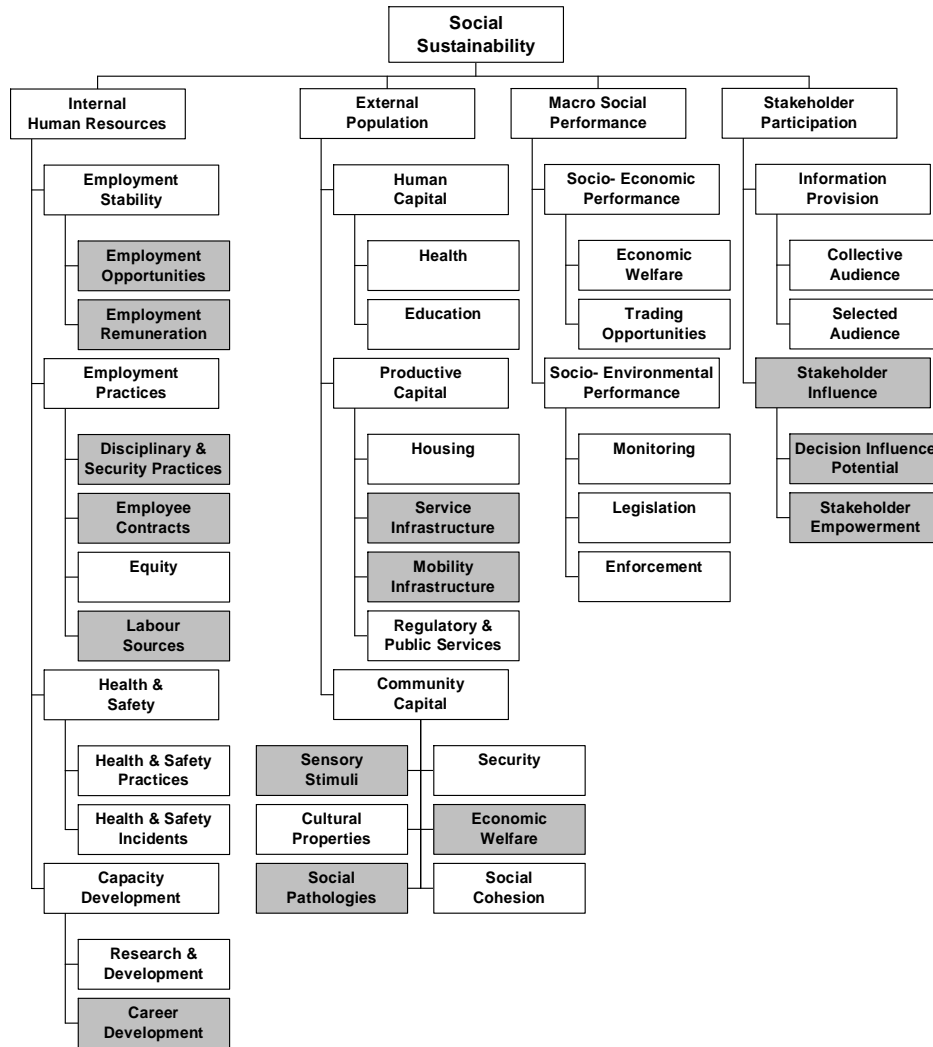


Figure 4-21: Social Aspects Relevant to the Decommissioning of the Acrylic Fibre Plant

b) Employment Compensation

Employees had to be compensated for the loss. The company offered retrenchment packages worth three times the legal requirement, i.e. one week’s pay for every year in service.

c) Disciplinary and Security Practices

Security practices had to be improved at the plant after announcing that the plant would be dismantled. The incidents of theft and fraud increased dramatically in the decommissioning period and disciplinary actions were taken.

d) Employee Contracts

Employee contracts had to be terminated. To ensure that the right personnel were available in the different stages of dismantling, all contracts were not terminated at the same time. All employees received three month's notice of termination, but at various times in the decommissioning period.

e) Labour Sources

This criterion is relevant, since the company decided to use the employees to de-commission the plant, although dismantling was done by contractors. The decision lengthened the employees' employment period

f) Career Development

The company offered a single monetary contribution to employees' training as part of the retrenchment packages. The employees had to apply for this contribution and the company had to approve the training or education course the employee wanted to pursue.

g) Service Infrastructure

The company purchased water and electricity from the local municipal council. On average, the company used 4.03 GWh of electricity per month and 119 100 ML of water. These calculations are based on energy and water usage figures per kg of production reported on in the sustainable development report, assuming a production output of 80% of total production capability. Detail calculations are shown in Appendix P. The annual water and electricity usage is, however, less than 1% of the annual usage of the Ethekewini Municipal Area.

h) Mobility Infrastructure

The impact of the decommissioning on the mobility infrastructure during the project was marginal. After completing the project, the impact was positive, as the risk of spillages and explosions associated with transporting the raw material was eliminated.

i) Sensory Stimuli

The closure of the plant resulted in a positive impact on sensory stimuli, since pollution would be eliminated. This impact was, however, marginal because the plant was situated in an industrial area and the plant's contribution to the area's pollution was marginal. The plant's emissions contributed 1% of the sulphur dioxide loading in the area's atmosphere and volatile emissions constituted less than 0.01% of the estimated volume of VOCs emitted into the area's atmosphere [263].

j) Economic Welfare

The area has a high unemployment rate. Decommissioning the project increased the rate. The community's economic welfare would thus be influenced. The company also no longer paid local taxes to the municipality, which indirectly influenced society's economic welfare. Both the company's

suppliers and clients were negatively impacted on by the decommissioning. At the time of decommissioning, it was believed that certain of these companies had to close down due to loss of business. No substantial evidence could, however, support the claim.

k) Social Pathologies

The project had an indirect impact on social pathologies, since there was a direct relationship between economic welfare and social pathologies.

l) Stakeholder Influence

Stakeholder influence was relevant to the decommissioning project. The company informed the employees about the partners' decision in March 2002 and advised them that the plant would be shut down. Workers were informed about the retrenchment packages as well as the guidelines, i.e. phased-out employment. Company personnel handled the information sharing process with the employees. The company did not officially inform the community about the decision, but presented all environmental information and studies to the community at a community workgroup meeting.

4.3.3 Open Cast Mine

4.3.3.1 Background

The open cast mine was situated in the grassland district of the Mpumalanga province in South Africa and produced approximately 7 million tons of low quality coal annually. It began operations in 1989 and had a 20 year designed life. Extreme cost pressures and geological difficulties forced an unexpected mine decommissioning in 2003. A project team was assembled to drive the decommissioning and rehabilitation of the mine. The project team spent time on agreeing and aligning the values that had been used to drive the project with a strong ethical propensity.

4.3.3.2 Social Issues Relevant to the Project

The social issues identified as relevant to decommissioning the open cast mine are depicted in Figure 4-22. Each of these is discussed in more detail.

a) Employment Opportunities

The mine employed operational, administrative and support personnel. At the end of March 2003, it employed 342 people. Although these employment opportunities were lost during decommissioning, the company mitigated the impact. In a related mining reserve deal with another company, 205 employees were re-allocated to the partner. The remainder of the personnel were retrained and redeployed to underground mining operations or offered the alternative of applying for employment opportunities within the company's other affiliations. A very small minority of the personnel accepted retirement packages.

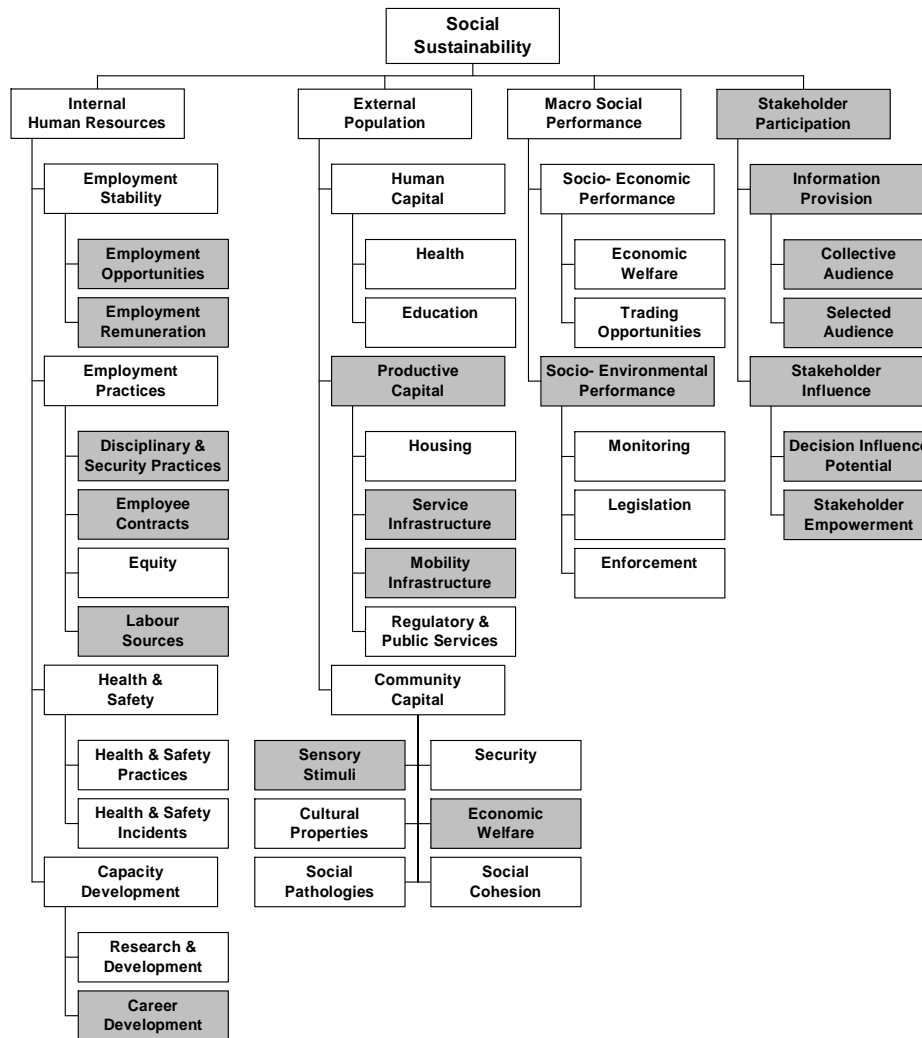


Figure 4-22: Social Issues Relevant to the Decommissioning of the Open Cast Mine

b) **Employment Compensation**

Although there were no retrenchments, the criterion is still relevant to the project. The move of personnel from one company to another resulted in extensive investigations into salaries and additional benefits, e.g. medical, pension, etc.

c) **Disciplinary and Security Practices**

Additional security practices were implemented in an attempt to minimise the theft of assets. These practices were intensified in the rehabilitation period.

d) **Employee Contracts**

Certain employee contracts had to be terminated, while other contracts had to be agreed on regarding the transfer of people from one company to the other.

e) **Labour Sources**

The mine's personnel performed the rehabilitation with the help of contractors. Contractors were requested to use local labour as far as possible, except where expert labourers were required and not locally available.

f) **Career Development**

Personnel were offered the option to be retrained in order to enhance their employability and to increase their suitability for positions at the company's underground operations or within other affiliations of the company.

g) **Productive Capital**

The mine was situated in an agricultural district and consumed 20 km² of agricultural land. The land was mainly used for cattle grazing. The closure and rehabilitation of the mine could thus enhance the available land area for agricultural use in future.

h) **Service Infrastructure**

Water for the mine is supplied directly from Rand Water via a pipeline. Although the open cast mine is closed, the underground operations will still use the pipeline. Electricity is supplied via the Eskom network. Although the closure of the mine made water and electricity available, it is estimated that the potable water use of the underground operations will increase by 30%, while power demand from Eskom is also expected to increase due to the expansion of the underground operations and the electricity that will be supplied to the partner in the related mineral reserve deal.

i) **Mobility Infrastructure**

The rehabilitation of the mine resulted in an increase of traffic over the short-term. Opening the additional underground shaft, i.e. a direct result of the mine closing, also increased the traffic.

j) **Sensory Stimuli**

The closure of the open cast mine had a positive impact on the sensory stimuli as observed by the nearby community with regards to aesthetics. The open cast operation also generated a large amount of dust which, depending on various factors, could influence visibility. Those impacts ceased to exist with the closure.

k) **Economic Welfare**

The mitigation of the loss of employment opportunities resulted in a minimal to no impact on economic welfare. However, since contractors assisted in the rehabilitation, economic welfare has been influenced positively over the short-term.

l) Socio-Environmental Performance

The closure of the open cast mine resulted in the opening of an additional underground shaft as well as the enlargement of other existing open cast mining activities in the area. The criterion is thus relevant, since the decommissioning changed the region's environmental impact profile.

m) Information Provision

The project team thoroughly addressed the information provision aspects. Since October 2002, extensive discussions with authorities on a national as well as regional level took place. IAPs were identified and information meetings as well as closure presentations were held. Information provision to employees started long in advance and increased in frequency to weekly meetings. The related mineral reserve deal implied that shareholders of the companies involved were also provided with information.

n) Stakeholder Influence

The company empowered their employees to be part of the process by involving trade unions and following an open approach to the redeployment options.

4.3.4 Conclusion

All social aspects which manifested in the three case studies could be classified into the framework. However, some other aspects that might manifest in decommissioning with examples thereof have been identified from literature cases and appear in Table 4-7. Figure 4-23 combines the results of the literature study and case studies.

Table 4-7: Other Criteria than can be Relevant in Decommissioning projects

Criterion	Explanation of Relevance in Decommissioning Projects
Health and Safety	If production facilities or mines exposed employees to dangerous substances that can cause long-term medical aspects, the employees' health and safety are an aspect that must be addressed in decommissioning. For example, Asbestos cases [264].
Health	Production facilities that had a negative impact on the external community's health can be held accountable after decommissioning. In such cases, the criterion should be addressed [265].
Housing	In cases where workers received housing as part of their remuneration, the criterion becomes relevant in decommissioning, since the sudden sale of numerous company houses can influence the value of house prices in an area.

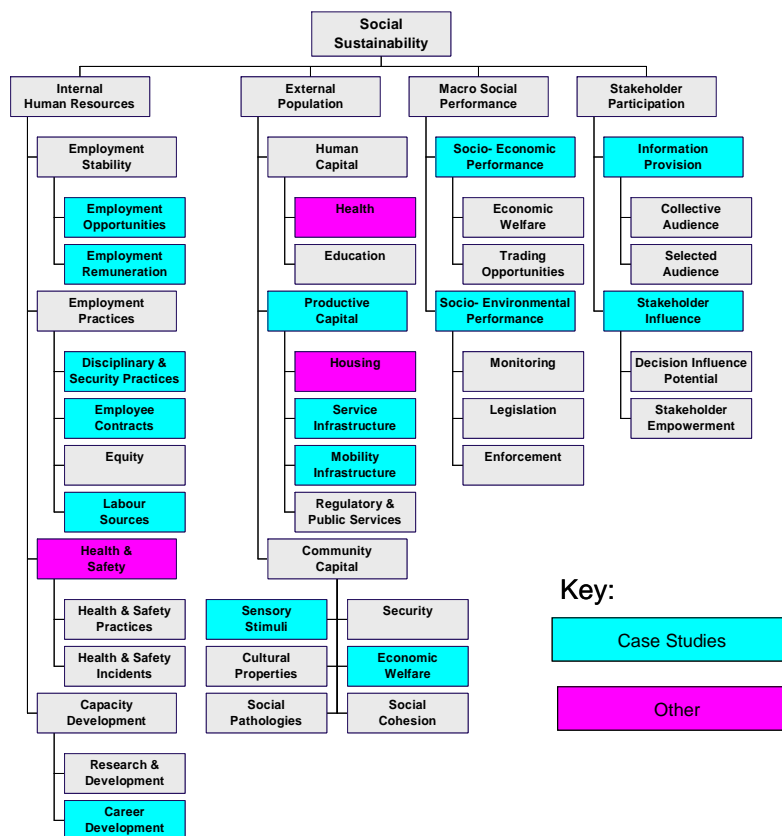


Figure 4-23: Social Aspects Relevant to Decommissioning

4.4 Conclusion

In case study research it is not easy to generalise from case study results to the general population since statistical generalisation can not necessarily be applied. Cases are not sampling units [220] and cannot be treated as such. The conclusion is reached that no aspect could be found that could not be classified into the criteria framework. In addition, all criteria did not manifest in each asset life cycle phase set of case studies. However, there might still be social aspects that did not manifest in either the case studies or the framework. Nevertheless, the basis on which the individual case studies have been chosen makes these cases adequately representative of the current social environment in which construction, operation and decommissioning takes place in the process industry of developing countries. It is subsequently concluded that the framework is complete enough to be used as an initial basis to incorporate social sustainability in project management methodologies.

5. Validation of the Social Sustainability Assessment Framework

The chapter discusses the validity of the proposed social sustainability assessment framework in terms of its relevance. The relevance has to be validated on three different levels, namely to businesses in general, to the various asset cycle phases, and to project management. However, relevance has a different definition for each of these levels and various techniques have been used for the validation on these levels (see Table 5-1).

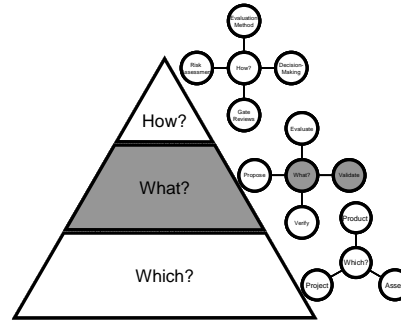


Table 5-1: Three levels of relevance and techniques used for validation on each level

Level	Definition of Relevance	Technique Used
Relevance to business	A criterion is relevant to business when it is a social aspect, which business should address or consider in its activities or when it is a social aspect for which business should take responsibility.	Survey
Relevance to the asset life cycle phases	A criterion is relevant to a specific asset life cycle phase when certain activities or actions during that life cycle phase are undertaken to address the aspect or when any activity or action during that life cycle phase has a direct or indirect impact on the criterion.	Literature Analysis
Relevance to project management	A criterion is relevant to project management when the criterion or the impact on the criterion needs to be addressed by the project team.	Delphi Technique

The structure of the chapter is shown in Figure 5-1.

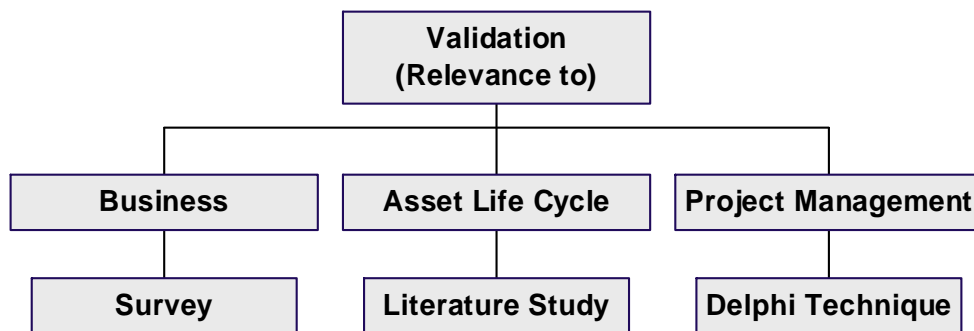
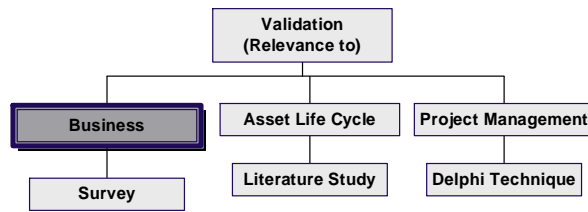


Figure 5-1: Validation Structure of the Proposed Social Sustainability Framework

5.1 Relevance to Business



A survey was conducted in the South African process industry to establish the criteria in the framework's relevance in terms of business sustainability. However, indirectly the survey also assessed the degree to which the process industry has made the paradigm shift towards embracing social sustainability. In Chapter 1 and Appendix A the growing importance of social issues are highlighted and the need to address these issues are motivated. Nevertheless, not all businesses are addressing the issues yet and not all businesses deem the issues worth addressing. The reasons for not addressing the issues can be either the business has not made a paradigm shift or the business has made the paradigm shift but feels certain issues are not their responsibility. Against this background the results of the survey have been interpreted in light of the environment of respondents. This might lead to logical conflicting statements.

5.1.1 Survey Structure and Participant Profile

Participants have been asked to rate the criteria's relevance on the following scale:

- high - highly relevant;
- medium - relevant; and
- low - not relevant at all.

Participants also assessed the level on which a specific criterion lies within the framework. The survey only included social criteria on Level 4 and 5 of the framework (see Figure 3-2 and Figure 3-6). A group of 30 experts within the process industry was identified and surveys sent out (see Appendix G for the survey). The response rate to the survey was 76.67%. The participants' expertise are summarised in Figure 5-2 and consists of professionals who are:

- actively involved in executing project management activities;
- responsible for executing and managing Environmental Impact Assessments (EIAs) within their specific company;
- involved with Corporate Social Responsibility (CSR) projects; and
- actively involved in the project appraisal process.

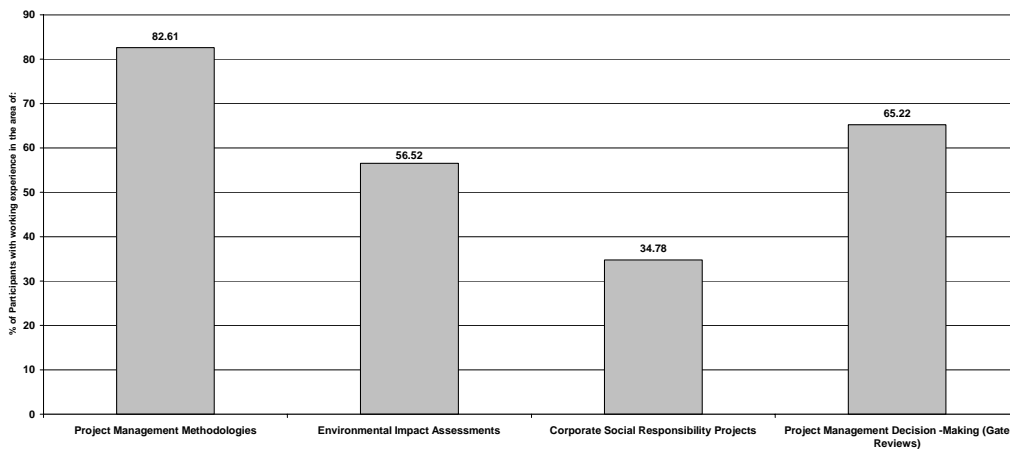


Figure 5-2: Related Expertise of the Participants of the Business Validation Survey

5.1.2 Survey Results

Figure 5-3 depicts the results of the survey’s relevance section. Answers rated high and “Medium” were grouped together as a rating of relevant. Low ratings were grouped as not-relevant. Confidence intervals of 95% for the corresponding true proportion were constructed, i.e. it is 95% certain that the population proportion of persons who will assign the rating relevant or not relevant falls within the specific interval, when taking into account the survey response and survey sample size. Table 5-1 depicts these confidence intervals. Appendix H contains confidence intervals for all criteria on all ratings.

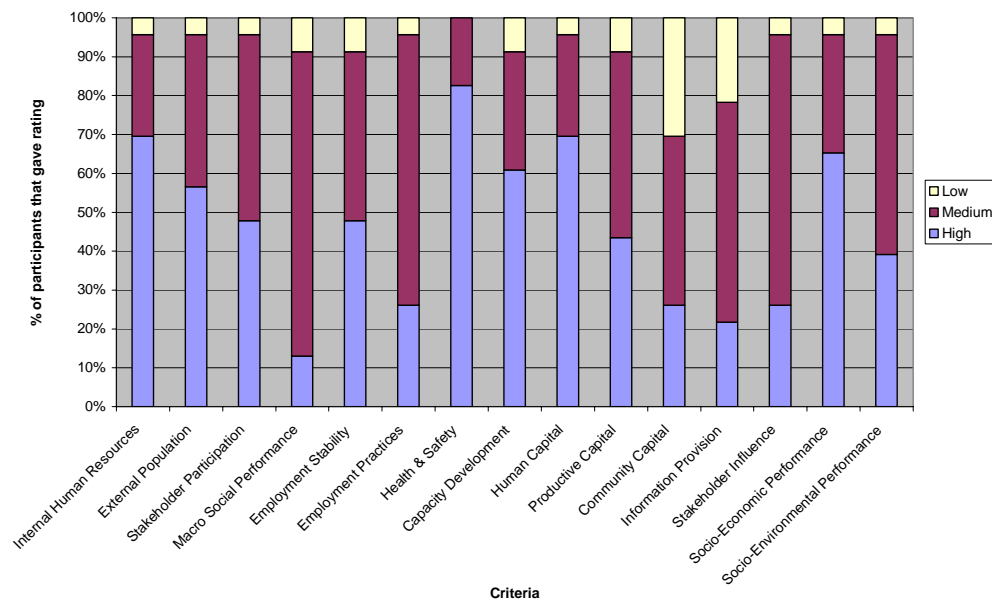


Figure 5-3: Results of the Survey regarding the Relevance of the Criteria

Table 5-2: 95% Confidence Intervals for the Corresponding True Proportions

Criteria	Relevant to Business		Not Relevant to Business	
	Response	Confidence Interval	Response	Confidence Interval
Internal Human Resources	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
External Population	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Macro Social Performance	91.30%	$79.79 < p < 1$	8.70%	$0 < p < 20.21$
Stakeholder Participation	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Employment Stability	91.30%	$79.79 < p < 1$	8.70%	$0 < p < 20.21$
Employment Practices	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Health and Safety	100.00%	$1 < p < 1$	0.00%	N/A
Capacity Development	91.30%	$79.79 < p < 1$	8.70%	$0 < p < 20.21$
Human Capital	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Productive Capital	91.30%	$79.79 < p < 1$	8.70%	$0 < p < 20.21$
Community Capital	69.57%	$50.76 < p < 88.37$	30.43%	$11.63 < p < 49.23$
Socio-Economic Performance	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Socio-Environmental Performance	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$
Information Provision	78.26%	$61.40 < p < 95.11$	21.74%	$4.88 < p < 38.60$
Stakeholder Influence	95.65%	$87.32 < p < 1$	4.35%	$0 < p < 12.68$

All criteria, except the ‘Community Capital’ and ‘Information Provision’ criteria, received a good response, as the lower limit of the 95% confidence interval for relevant lies at 80% or above. More than 30% of all participants deemed “Community Capital” not relevant.

This outcome indicates that the paradigm shift regarding business taking responsibility for all its social impacts on external communities, even the softer issues, such as community cohesion, have not yet taken place under all role players. The criterion can, however, not be excluded from the framework, based on the lack of support for its relevance. Nearly 22% of the participants deemed information provision not relevant. In the South African context, the criterion can, however, not be excluded from the framework, as the Promotion of Access to Information Act of 2000 will result in the aspect’s growing importance. Information provision is also a key building block in stakeholder relationships, which form the basis of stakeholder participation.

The survey concludes that certain aspects are far more relevant to business than others. These are:

- Level 4:
 - 0 Health and Safety;
 - 0 Internal Human Resources; and
 - 0 External Population.

- Level 5
 - 0 Human Capital;
 - 0 Socio-Economic Performance; and
 - 0 Capacity Development.

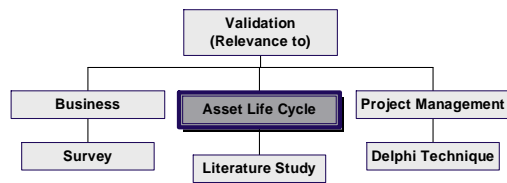
The results indicating whether the specific criterion is on the right level are summarised in Table 5-3.

Table 5-3: Survey Results on the Correct Level of the Individual Criteria

Criterion	Percentage of Survey Participants that Indicated that the Specific Criterion is Represented at the Correct Level within the Framework.
<i>Internal Human Resources</i>	86.96%
Employment Stability	82.61%
Employment Practices	86.96%
Health and Safety	52.17%
Capacity Development	86.96%
<i>External Population</i>	86.96%
Human Capital	78.26%
Productive Capital	82.61%
Community Capital	82.61%
<i>Macro Social Performance</i>	86.96%
Socio-Economic Performance	82.61%
Socio-Environmental Performance	82.61%
<i>Stakeholder Participation</i>	86.96%
Information Provision	82.61%
Stakeholder Influence	86.96%

With the exception of the health and safety criterion, the outcome indicates that all criteria are on the correct level. Nearly 50% of the participants indicated that health and safety should be represented at a higher level within the framework. The extensive focus on health and safety as well as the widespread health and safety campaigns launched in the South African process industry over the last two decades, rationalises this outcome [266]. The survey indicated that the framework as well as its criteria is relevant to business in general and that the criteria manifest on the right levels.

5.2 Relevance to the Asset Life Cycle



Verification of the proposed social sustainable development framework indicated that the framework is comprehensive enough to address social aspects relevant in the various asset life cycle phases. Although the social aspects can be classified into the criteria framework, the framework needs to be validated to determine the criteria’s relevance to each of the different asset life cycle phases or to any one of the phases at all.

To validate the criteria framework, the focus shifts to indicators able to assess the various criteria. An extensive literature study focused on identifying possible indicators to assess the various criteria. A number of indicators have also been proposed to assess the criteria in general. These indicators are based on or adapted from indicators on a national or regional level. Appendix I provides a detailed description of all the indicators found. The indicators’ relevance to the four asset life cycle phases have been evaluated by determining whether the indicators could be used for assessment in or after the phase (see Appendix I). The evaluation concluded that not all indicators can be used in all phases. It is assumed, however, that if an indicator assessing an aspect of a criterion can be used in or after completion of the phase, the criterion is relevant to the respective phase. Table 5-4 summarises the results of the literature study.

Table 5-4: Relevance of Social Criteria in the Asset Life Cycle

Criterion	Design	Construction	Operation	Decommissioning
Internal Human Resources		X	X	X
<i>Employment Stability</i>				
Employment Opportunities	X	X	X	X
Employment Remuneration		X	X	X
<i>Employment Practices</i>		X	X	X
Disciplinary and Security Practices		X	X	X
Employee Contracts		X	X	X
Equity and Diversity		X	X	X
Labour Sources	X	X	X	X
<i>Health and Safety</i>		X	X	X
Health and Safety Practices		X	X	X
Health and Safety Incidents		X	X	X
<i>Career Development</i>		X	X	X
Research Development	X	X	X	X
Career Development		X	X	X

Table 5-4: Relevance of Social Criteria in the Asset Life Cycle (continues)

Criterion	Design	Construction	Operation	Decommissioning
External Population¹¹		X	X	X
<i>Human Capital</i>		X	X	X
Health		X	X	X
Education		X	X	X
<i>Productive Capital</i>		X	X	X
Housing		X	X	X
Service Infrastructure	X	X	X	X
Mobility Infrastructure	X	X	X	X
Regulatory and Public Services/ Institutional Services		X	X	X
<i>Community Capital</i>		X	X	X
Sensory Stimuli	X	X	X	X
Security		X	X	X
Cultural Properties		X	X	X
Economic Welfare		X	X	X
Social Pathologies		X	X	X
Social Cohesion		X	X	X
Macro Social Performance		X	X	X
<i>Socio-Economic Performance</i>		X	X	X
Economic Welfare		X	X	X
Trading Opportunities		X	X	X
<i>Socio-Environmental Performance</i>		X	X	X
Monitoring	X	X	X	X
Legislation		X	X	X
Enforcement		X	X	X
Stakeholder Participation		X	X	X
<i>Information Provisioning</i>		X	X	X
Collective Audience		X	X	X
Selected Audience		X	X	X
<i>Stakeholder Influence</i>		X	X	X
Decision Influence Potential		X	X	X
Stakeholder Empowerment		X	X	X

¹¹ Most of the indicators assessing the external population criterion and sub-criteria do not isolate the company's contribution to the impact. However, the company can have an impact on the external community at all times and it is therefore concluded that the criteria are relevant.

The literature study also indicated that although all criteria are relevant to the construction, operations and decommissioning phases, criteria are addressed differently in the individual phases. This conclusion is based on the fact that the indicators found in literature can be divided into three groups, namely:

- indicators *assessing* the existence and quality of certain company practices, processes or strategies, thus assessing conditions;
- indicators *measuring the impact* of the company on stakeholders, such as employees and the external community; and
- indicators *describing* conditions or outcomes within the company itself or within the community. In the community's case, it is often difficult to isolate the company's contribution to these conditions.

These indicators thus assesses either practices/processes and/or strategies or measuring and/or describing outcomes or impacts. It can therefore be concluded that social aspects can be addressed in the following ways:

- strategies or guiding principles;
- processes or policies; and
- measuring or monitoring outcomes that can include possible impacts. These can be reported on.

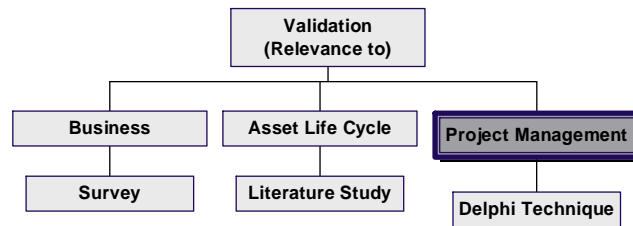
The business model used in section 1.2, which indicated that business have distinct levels on which change takes place namely, strategic, process and operational level, adds further weight to this outcome. It seems logical that social aspects should be addressed on all three levels. The analysis of both the relevant indicators and the indicator types are combined to propose a way to address the social aspects in the various life cycle phases (see Appendix J). Table 5-5 depicts a summary of the above.

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 5

Table 5-5: Ways to Address Social Aspects in the Individual Life Cycle Phases

Criterion	Asset Life Cycle Phase	Design			Construction			Operation				Decommissioning			Measure/ Predict as a Social Impact?	
		Principle/ Strategy	Process/ Policy	Outcome	Principle/ Strategy	Process/ Policy	Outcome	Principle/ Strategy	Process/ Policy	Accredit- ations	Outcome	CSI / CSR Projects	Principle/ Strategy	Process/ Policy		Outcome
A Internal Human Resources																
1 Employment Stability C,O,D																
i	Employment Opportunities	D,C,O,D	x			x	x		x		x			x	x	x
ii	Employment Remuneration	C,O,D			x	x	x	x	x	x	x		x	x	x	x
2 Employment Practices C,O,D																
Disciplinary & Security Practices C,O,D																
i	Employee Contracts	C,O,D				x	x		x	x	x			x	x	
ii	Equity & Diversity	C,O,D				x	x		x	x	x			x	x	
iii	Labour Sources	D,C,O,D	x			x	x		x	x	x			x	x	x
3 Health & Safety C,O,D																
Health & Safety Practices C,O,D																
i	Health & Safety Incidents	C,O,D				x	x		x	x	x			x	x	
ii	Health & Safety Incidents	C,O,D				x	x		x		x			x	x	x
4 Capacity Development C,O,D																
Research Development D,C,O,D																
i	Career Development	C,O,D		x					x		x			x		
ii	Career Development	C,O,D				x	x		x		x			x	x	x
B External Population C,O,D																
1 Human Capital C,O,D																
Health C,O,D																
i	Education	C,O,D					x				x	x			x	x
ii	Education	C,O,D					x				x	x			x	x
2 Productive Capital C,O,D																
Housing C,O,D																
i	Service Infrastructure	D,C,O,D	x		x	x	x		x		x			x	x	x
ii	Service Infrastructure	D,C,O,D					x				x	x			x	x
iii	Mobility Infrastructure	D,C,O,D	x						x		x	x			x	x
Regulatory & Public Services/ Institutional Services C,O,D																
i	Regulatory & Public Services/ Institutional Services	C,O,D			x		x	x			x	x	x		x	x
ii	Sensory Stimuli	D,C,O,D	x				x				x				x	x
iii	Security	C,O,D					x								x	x
iv	Cultural Properties	C,O,D				x	x							x	x	x
v	Economic Welfare	C,O,D				x	x		x		x			x	x	x
vi	Social Pathologies	C,O,D				x	x		x		x	x		x	x	x
vii	Social Cohesion	C,O,D				x	x				x	x		x	x	x
C Macro Social Performance C,O,D																
1 Economic Performance C,O,D																
Economic Welfare C,O,D																
i	Economic Welfare	C,O,D					x				x				x	x
ii	Trading Opportunities	C,O,D					x				x				x	x
2 Environmental Performance C,O,D																
Monitoring D,C,O,D																
i	Monitoring	D,C,O,D	x			x	x		x		x				x	x
ii	Legislation	C,O,D				x	x		x		x			x	x	x
iii	Enforcement	C,O,D				x	x		x		x			x	x	x
D Stakeholder Participation C,O,D																
1 Information Provisioning C,O,D																
Collective Audience C,O,D																
i	Collective Audience	C,O,D			x	x	x	x	x		x		x	x	x	x
ii	Selected Audience	C,O,D			x	x	x	x	x		x		x	x	x	x
2 Stakeholder Influence C,O,D																
Decision Influence Potential C,O,D																
i	Decision Influence Potential	C,O,D				x	x		x		x			x	x	
ii	Stakeholder Empowerment	C,O,D				x	x		x		x			x	x	

5.3 Relevance to Project Management



The Delphi technique was used to determine social criteria's relevance to project management. This technique was chosen, as it can aggregate a number of individuals' judgments without bringing them together. A homogeneous respondent group was chosen. A sample size of ten was therefore used [267]. A group of ten project management experts were identified with the assistance of an industry partner. The aim was to identify ten project managers whom have been involved with project management for various lengths of time and who have managed between them projects of various sizes. It was decided to handle the group anonymously. Two iterations of questionnaires and feedback reports were executed. The first round included a personal interview with each respondent to explain the purposes and to put the defined social criteria into perspective. The social criteria on Level 6 of the framework were used for evaluation purposes, as it can be reasoned that where lower level criteria are relevant, the main criteria will also be relevant. Examples of the questionnaires used are attached in Appendix K.

The first questionnaire covered the broad question on whether the specific social criteria should be addressed in project management, within a corporate governance framework or within both. The two alternatives were specifically defined to ensure that all participants had the same understanding of the concepts. Respondents also had the opportunity to comment on the criteria. The respondents' comments indicated that the second option, i.e. the corporate governance framework, was too broad and that it should rather be more specific, namely address in business strategy and address by functional department within the organisation. The second questionnaire therefore presented the first questionnaire's results as well as an additional second question using this distinction. The final questionnaire simply summarised the results. Since all respondents were in mutual agreement, verification was deemed unnecessary. The judgements were aggregated by using a binary coding approach towards the Yes/No answers. In round one the decision rule of more than 80% results in an affirmative answer was used. The same rule was applied to the second questionnaire.

The Delphi technique results are summarised in Table 5-6. The results indicate that the respondents believe all criteria should be addressed but that not all criteria should be addressed in project management, i.e. the project team should directly address the criteria. Respondents agreed that although some criteria should be addressed in business strategy or by functional departments (FD), the criteria can still influence project management. Respondents concluded that not all criteria are relevant from a project management perspective. The Delphi technique concluded that greenfield projects, i.e. projects in areas where the company has not operated before and/or areas that are currently not industrial areas, and brownfield projects, i.e. projects in industrial areas and/or in areas where the

company operated before, could require different approaches. The main reason being that social aspects should be considered earlier in a greenfield projects and that project team also handles more social aspects self instead of referring it to functional departments. The Delphi technique's questionnaires thus focus on normal projects, i.e. brownfield projects.

Table 5-6: Results of the Delphi Technique

Criterion	The Criterion should be Addressed by		
	Project	Business Strategy	FD
Employment Opportunities	X	X	X
Employment Remuneration		X	X
Disciplinary and Security practices			X
Employee Contracts		X	X
Equity and Diversity		X	X
Labour Sources	X	X	X
Health and Safety practices	X	X	X
Health and Safety incidents	X	X	X
Research Development	X	X	
Career development			X
Health	X	X	
Education	X	X	X
Housing	X	X	
Service Infrastructure	X	X	
Mobility Infrastructure	X	X	
Regulatory and Public services/ Institutional services		X	
Sensory Stimuli	X	X	X
Security	X	X	
Cultural Properties	X	X	
Economic Welfare	X	X	
Social Pathologies	X	X	
Social Cohesion	X	X	
Economic Welfare		X	
Trading Opportunities		X	
Monitoring			X
Legislation	X	X	
Enforcement	X	X	X
Information Provisioning	X	X	
Stakeholder Influence		X	

5.4 Conclusion

From a general business perspective, all criteria in the framework are relevant. Not all criteria, however, are deemed relevant to all life cycle phases, nor are all criteria deemed relevant to project management. Table 5-7 summarises the results from the validation of the social sustainability framework. One of the core principles of sustainable project life cycle management is a life cycle management perspective that considers all aspects and impacts relevant in the asset and product life cycles in the project life cycle. In conclusion, the framework is relevant to business and relevant to project management. The question now arises *how* to incorporate, i.e. address, the social criteria in project management.

Table 5-7: Summary of Validation Results

Criteria	Asset Life Cycle				Project Management
	Design	Construction	Operation	Decommissioning	
Internal Human Resources		X	X	X	X
<i>Employment Stability</i>					X
Employment Opportunities	X	X	X	X	X
Employment Remuneration		X	X	X	
<i>Employment Practices</i>		X	X	X	
Disciplinary and Security Practices		X	X	X	
Employee Contracts		X	X	X	
Equity and Diversity		X	X	X	
Labour Sources	X	X	X	X	X
<i>Health and Safety</i>		X	X	X	
Health and Safety Practices		X	X	X	X
Health and Safety Incidents		X	X	X	X
<i>Career Development</i>		X	X	X	
Research Development	X	X	X	X	X
Career Development		X	X	X	
External Population		X	X	X	X
<i>Human Capital</i>		X	X	X	X
Health		X	X	X	X
Education		X	X	X	X
<i>Productive Capital</i>		X	X	X	X
Housing		X	X	X	X
Service Infrastructure	X	X	X	X	X

Table 5-7: Summary of Validation Results (continues)

Criteria	Asset Life Cycle				Project Management
	Design	Construction	Operation	Decommissioning	
Mobility Infrastructure	X	X	X	X	X
Regulatory and Public Services/ Institutional Services		X	X	X	
<i>Community Capital</i>		X	X	X	X
Sensory Stimuli	X	X	X	X	X
Security		X	X	X	X
Cultural Properties		X	X	X	X
Economic Welfare		X	X	X	X
Social Pathologies		X	X	X	X
Social Cohesion		X	X	X	X
Macro Social Performance		X	X	X	X
<i>Socio-Economic Performance</i>		X	X	X	
Economic Welfare		X	X	X	
Trading Opportunities		X	X	X	
<i>Socio-Environmental Performance</i>		X	X	X	X
Monitoring	X	X	X	X	
Legislation		X	X	X	X
Enforcement		X	X	X	X
Stakeholder Participation		X	X	X	X
<i>Information Provisioning</i>		X	X	X	X
Collective Audience		X	X	X	X
Selected Audience		X	X	X	X
<i>Stakeholder Influence</i>		X	X	X	
Decision Influence Potential		X	X	X	
Stakeholder Empowerment		X	X	X	

6. Social Criteria in Project Management

Verifying the proposed social sustainability framework (see Chapter 4) indicated that the framework is comprehensive enough to be used as a basis to address any social aspects that might arise in the asset life cycle’s construction, operation and decommissioning phases.

However, the validation of the framework (see Chapter 5) indicated that the social criteria are addressed differently in the various asset life cycle phases. The validation also indicated that project management experts do not deem all criteria relevant for project management. This chapter discusses HOW the proposed framework’s social criteria should be addressed in project management. The chapter’s layout is shown in Figure 6-1.

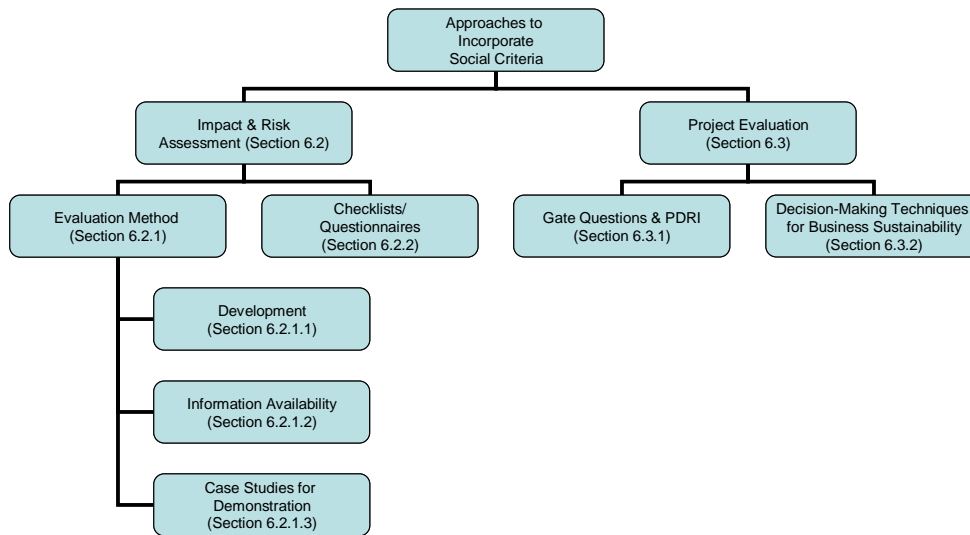
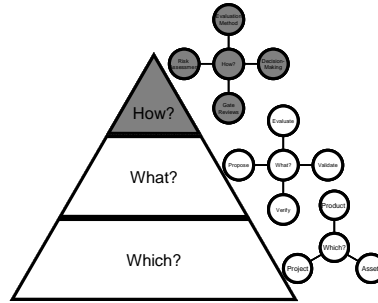


Figure 6-1: Chapter Layout

6.1 Introduction

A core principle of sustainable project life cycle management is that the economic, environmental and social consequences of the asset and product life cycles should be considered in the project life cycle. Although project managers do not deem all social criteria relevant for project management, it is, however, proposed that all social criteria should be addressed in the project management methodology, as all criteria are relevant at some stage in the asset life cycle and a core principle introduced for sustainable project life cycle management is addressing social impacts of the asset life cycle in the project life cycle. Although this conclusion might seem to contradict the Delphi case study’s results (see Chapter 5), it does not. Most projects require co-operation across a number of functional departments in the organisation [116], and the social criteria addressed by each of these functional

departments would thus imply that the project will also address the criteria due to the functional department's involvement. The same applies to business strategy, since projects as the tools to implement strategy would definitely adhere to the business strategy. Using Chapter 1's generic project management methodology (Figure 1-4) as basis, it is possible to identify the following two additional levels to the strategic level on which social criteria can be incorporated into project management:

- activities and deliverable level - this includes social aspects in activities executed in specific phases and deliverables required at the end of the specific phase; and
- evaluation level - this includes social aspects in gate readiness reviews as well as in the gate decision-making process.

However, a prerequisite for answering the "HOW" question remains to identify ways of addressing social aspects on these various levels. Proposed approaches for each level is summarised in Table 6-1.

Table 6-1: Approaches to Incorporate Social Criteria in Project Management Methodologies

Level	Approach	Description of Approach
Strategic	Project governance framework	A framework describing the way in which the project must be executed and providing indicators to assess the project afterwards
Activities and deliverables	Risk assessment/risk management	Questionnaires to identify possible risks with guidelines of what to do if it is encountered
Activities and deliverables	Impact prediction/assessment	Measuring social impacts in terms of the criteria using questionnaires to identify impacts and/or an evaluation method
Activities and deliverables	Social development plan	In certain projects, a social development plan has to be executed as part of the project
Evaluation	Gate questions	Developing gate questions that can both prompt decision-makers to consider the social criteria as well as ensure that the project addressed the criteria
Evaluation	Project Definition Rating Index (PDRI) ¹² [268]	Developing a social PDRI to be used in gate readiness reviews
Evaluation	Decision-making techniques	Techniques to ensure that all three dimensions of sustainable development are considered in decision-making

¹² "PDRI is a weighted checklist of project scope definition elements that facilitates assessment of a project during pre-project planning"[268].

Table 6-2 summarises the approach/es to be followed for each criterion. More detail on the approaches for each specific criterion is attached in Appendix L. Functional departments in the project life cycle should address the following criteria in Table 6-2:

- Employment Opportunities;
- Employment Remuneration;
- Disciplinary and Security Practices;
- Employee Contracts;
- Equity & Diversity;
- Labour Sources;
- Health and Safety Practices; and
- Research and Development.

In certain cases where functional departments do not exist yet or are not involved at all, the project team should follow the approaches listed for the operation phase (see Appendix J) to guide them in executing new placements, and other related or relevant activities.

To incorporate the social criteria in project management methodologies by following the defined approaches mentioned, the following is required:

- checklists/questionnaires to identify possible social risks and/or impacts;
- evaluation methods to measure predicted social impacts;
- structure of a project governance framework with indicators to be used for post-implementation reviews;
- guidelines for social development plans; and
- project evaluation method refinements or development of new techniques.

However, the topic of project governance models or frameworks for project management is a research topic on its own [269]. Financial institutions normally provide guidelines for social development plans [see Appendix A]. Only the following two main approaches to incorporate the social criteria in project management methodologies will therefore be investigated:

- social impact and social risk assessment - checklist, questionnaires and evaluation method; and
- project evaluation methods.

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 6

Table 6-2: Approaches that should be Followed to Incorporate Specific Criteria in Project Management Framework

	Approach Followed in Project Management Methodology			
	Measure Predicted Social Impact	Project Governance Framework and Indicators to Assess during Post Implementation Review (PIR)	Risk Assessment (Questionnaires and Guidelines)	Address in Social Development Plan if Applicable to project
Employment Opportunities	X ^a	X	X ^b	
Employment Remuneration		X		
Disciplinary and Security practices		X		
Employee Contracts		X		
Equity and Diversity		X		
Labour Sources	X ^a	X	X ^b	
Health and Safety practices		X		
Health and Safety incidents	X		X	
Research Development	X			
Career Development		X	X	
Health	X ^c			X
Education	X ^c			X
Housing	X ^c			X
Service Infrastructure	X ^c		X	X
Mobility Infrastructure	X ^c		X	X
Regulatory and Public services/ Institutional services		X		X

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 6

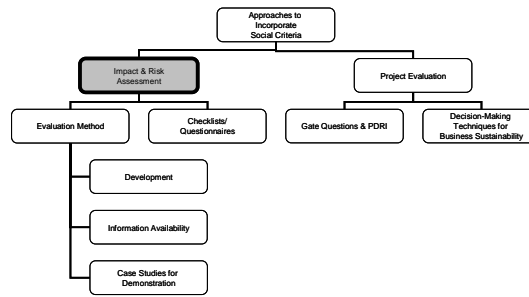
Table 6-2: Approaches that should be Followed to Incorporate Specific Criteria in Project Management Framework (continues)

	Measure Predicted Social Impact	Approach Followed in Project Management Methodology		
		Corporate Governance Framework and Indicators to Assess during PIR	Risk Assessment (Questionnaires and Guidelines)	Address in Social Development Plan if Applicable to Project
Sensory Stimuli	X ^c		X	
Security	X ^c			
Cultural Properties	X		X	X
Economic Welfare	X ^{a,c}			X
Social Pathologies	X ^c			X
Social Cohesion	X ^c		X	X
Economic Welfare	X			
Trading Opportunities	X			X
Monitoring	Not applicable to projects			X
Legislation			X	
Enforcement		X	X	X
Information Provisioning		X	X	
Stakeholder Influence		X	X	
^a – Link between impacts, double counting can occur ^b – Link between criteria, can be addressed in same set of guidelines ^c – Influx of people, a contributing factor to impact				

6.2 Social Impact and Social Risk Assessment

Social Impact Assessment (SIA) and Social Risk Assessment (SRA) are closely connected, since SIA provides insight into social risks and possible mitigation options, while SRA is regarded as a complement to SIA [270]. The

two approaches will be integrated with questionnaires and checklists. However, to determine when to predict impacts and when to rely on a risk approach, the evaluation method proposed for social sustainable project life cycle management has to be developed and tested first.

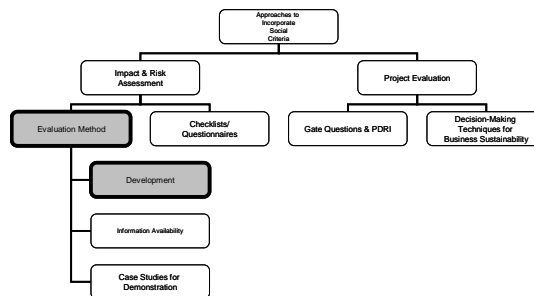


6.2.1 Evaluation Method for Predicted Social Impact

6.2.1.1 Development of Method

The evaluation method is based on a Life Cycle Impact Assessment (LCIA) methodology. An LCIA model/methodology referred to as the Resource Impact Indicator (RII) method has

been developed specifically for the South African environment [271] and is taken as a basis. The RII method calculates environmental impact indicators on four natural resource groups, following the precautionary principle and using the following equation:



$$RII_G = \sum_C \sum_X Q_X \cdot C_C \cdot N_C \cdot S_C \quad 6-1$$

Where:

RII_G = RII calculated for a main resource group, i.e. air, water, land and mined abiotic resources (as discussed in section 3.3.2) by summarising all impact pathways of the life cycle inventory constituents on a resource group

Q_X = Quantity of LCI constituent X, i.e. the impact in units

C_C = Characterisation factor for an impact category C (of constituent X) within the pathway

N_C = Normalisation factor for the impact category based on the ambient footprint, i.e. the inverse of the target state of the impact category

And: $S_C = \frac{C_S}{T_S}$ = Significance (or relative importance) of the impact category based on the distance-to-target method, i.e. current ambient state (C_S) divided by the target ambient state (T_S) [271]

The RII model is applied on a midpoint category, i.e. sub-impact category level, and requires weighting mechanisms to calculate a single score for the environmental dimension (shown in Figure 6-2).

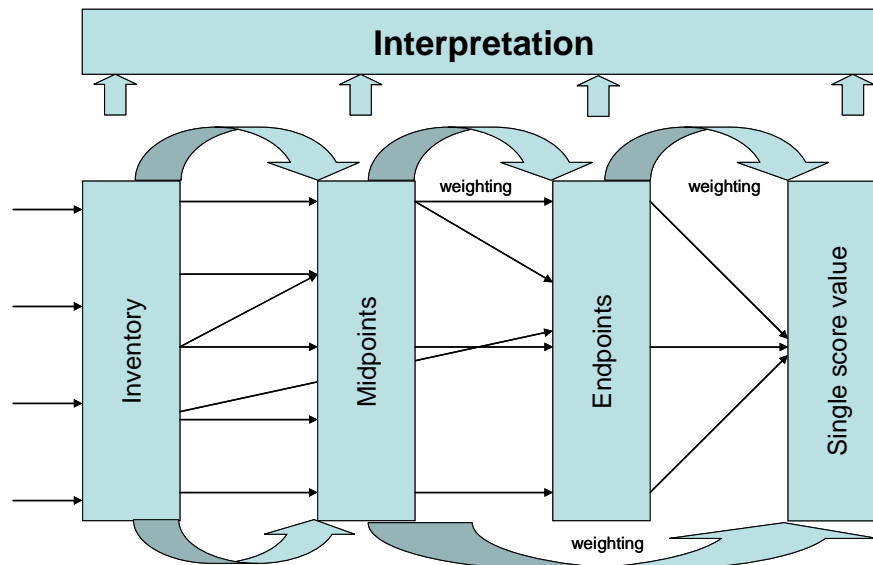


Figure 6-2: Midpoints and Endpoints in a Single Scoring Mechanism [Bare, et al in 271]

The RII method has been adopted to calculate Social Impact Indicators (SII). The following equation determines SII values by using the available project and social footprint information:

$$SII_G = \sum_C \sum_X Q_X \cdot C_C \cdot N_C \cdot S_C \quad 6-2$$

Where:

SII_G = SII calculated for a main area of protection (Level 4 of framework see Figure 3-6) by summarising all impact pathways of the life cycle inventory constituents for the areas of protection

Q_X = Quantity of LCI constituent X, i.e. the impact in units

C_C = Characterisation factor for an impact category C (of constituent X) within the pathway if necessary

N_C = Normalisation factor for the impact category based on the social footprint, i.e. the inverse of the target state of the impact category

And: $S_C = \frac{C_S}{T_S}$ = Significance or relative importance of the impact category based on the distance-to-target method, i.e. current state of social footprint (C_S) divided by the target state for social footprint (T_S).

To use the SII method, it is necessary to develop, define or determine the following:

- social interventions - actions affecting the social impact category that should form part of a compiled social LCI of the evaluated project/asset/product system;
- social impact category/areas of concern that can be used in the same manner as the four main resource groups in the RII. This would typically be a category representing a social issue of

concern into which LCI results can be assigned. Areas of concern will also be used as endpoints; and

- social midpoint categories or sub-impact categories, representing variables between the social interventions and social impact category endpoints, through an overview of the causal relationships between the social intervention, midpoints and endpoints [272].

6.2.1.1.1 Social Interventions

The case studies in Chapter 4 provided information regarding possible social interventions caused or influenced by businesses. These social interventions should therefore be taken into consideration.

These interventions are listed in Table 6-3.

Table 6-3: Possible Social Interventions

Possible Social Interventions
<ul style="list-style-type: none"> • Employment opportunities - permanent or temporary, full-time or part-time, i.e. nature of jobs • Wages • Employee benefits • Indirect employment opportunities • Health and safety incidents • Health and safety practices • Migratory influx • National taxes • Local taxes • Water usage • Energy usage • Waste generation • Transporting people • Transporting goods • Structure of plant • Location of plant • Noise generated • Emissions released with strong odours • Nature of purchases, i.e. value and location of vendors • Nature of sales, i.e. value and location of clients • Investment in socio-environmental services • Investment in stakeholder participation initiatives • Investment in research and development facilities • Investment in training

Table 6-3: Possible Social Interventions (continues)

<ul style="list-style-type: none"> • Investment in health facilities • Investment in education • Investment in housing • Investment in water services • Investment in energy services • Investment in waste services • Investment in regulatory and public services • Investment in transport network • Stakeholder complaints

6.2.1.1.2 Social Impact Categories

The proposed social sustainability framework is used to define social impact categories. The four main social criteria, i.e. Level 4 of the framework, namely Internal Human Resources, External Population, Macro Social Performance and Stakeholder Participation, are defined as Areas of Concern (AoC) for which SIIs have to be calculated. The criteria on Levels 5 and 6 of the framework are used to assist in drawing causal relationships.

6.2.1.1.3 Midpoint Categories and Causal Relationships

Midpoint categories are sub-indicator categories used to establish a causal relationship between the social interventions and Level 6 criteria. Initially, all Level 6 criteria are used. A detailed overview of the causal relationships is shown in Appendix M. Table 6-4 shows the midpoint categories that have been defined in the relationship diagram as well as the best unit of equivalence. The causal relationship diagram was constructed by mapping interventions against areas of protection. As indicated in Appendix M, two midpoint categories, namely permanent positions and local population, are a level below the others.

The approaches proposed in Table 6-2 indicates that the following two midpoint categories are obsolete, since it does not provide input to a criterion that needs to be measured:

- knowledge level; and
- access to regulatory and public services.

Figure 6-3 shows the mapping between the relevant midpoint categories and the Areas of Protection.

Table 6-4: Midpoint Categories and Units of Equivalence

Midpoint Category	Units of Equivalence
Permanent positions	Number of employment opportunities equivalent to managerial positions e.g. number of black disabled female manager equivalents
Possible health and safety incidents	Fatality or disability injury rate
Knowledge level	Number of a skills level
R&D capacity	Expenditure on R&D capacity
Comfort level	Risk of discomfort
Aesthetics	Level of perceived acceptability
Local employment	Fraction of employable community hours
Local population	Level of short-term demographic changes
Access to health facilities	People per qualified doctor
Access to education	Literate adults
Availability of acceptable houses	Zoned residential area per capita
Availability of water services	Water of drinking quality per capita
Availability of energy services	kWh of electricity per capita
Availability of waste services	Capita per G:h landfill site
Pressure on public transport services	Seat kilometres per capita
Pressure on transport network	Ton kilometres per capita
Access to regulatory and public services	Expenditure on regulatory and public services per capita
External value of purchases	Fraction of purchased locally-manufactures goods
Migration of clients	Level of client portfolio
Improvement of socio-environmental services	Expenditure on socio-environmental services per capita
Change in relationships	Level of stakeholder trust

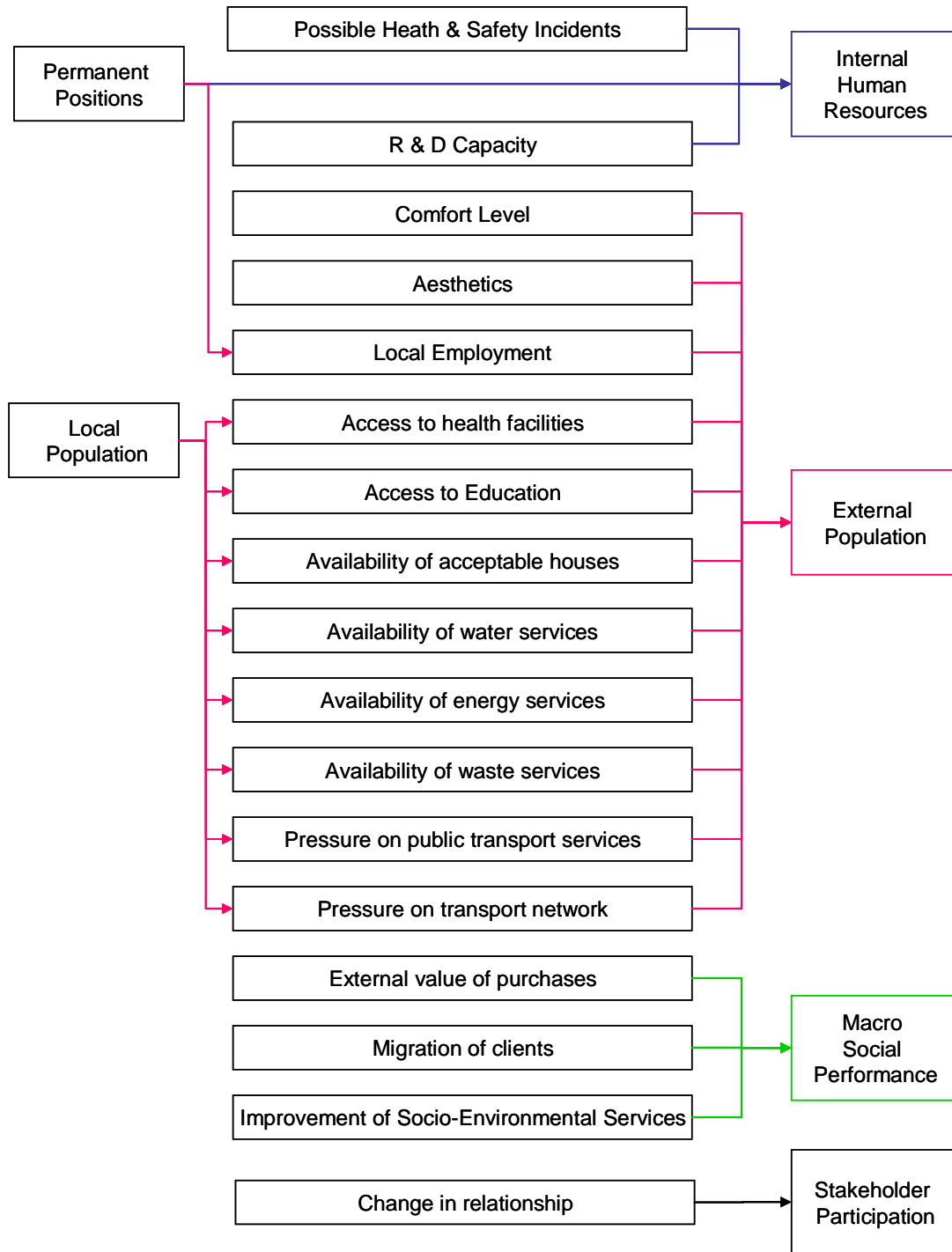


Figure 6-3: Midpoint Categories Mapped Against Areas of Protection

Two measurement methods are proposed to express the defined midpoint categories in equivalence units (see Table 6-5):

- quantitative evaluation approaches, including, but not limited to, costs and direct measurements in society; and
- qualitative evaluation approaches, which require appropriate subjective scales and associated guidelines, and have been proposed for the industrial ecology and streamlined LCA disciplines [133, 136].

Table 6-5: Midpoint Categories and Evaluation Methods

Quantitative Evaluation Method	Qualitative Evaluation Method
<ul style="list-style-type: none"> • Permanent positions • Possible health and safety incidents • Knowledge level • R&D capacity • Comfort level • Local employment • Access to health facilities • Access to education • Availability of acceptable houses • Availability of water services • Availability of energy services • Availability of waste services • Pressure on public transport services • Pressure on transport network • Access to regulatory and public services • External value of purchases • Improvement of socio-environmental services 	<ul style="list-style-type: none"> • Aesthetics • Local population • Migration of clients • Change in relationships

The proposed evaluation methods for the midpoint categories are shown and demonstrated in the following sections.

6.2.1.2 Information Availability

To refine each midpoint category's evaluation method and to decide at which point in the project to start using the evaluation method, the following aspects should be addressed:

- information availability at the point of assessment within the project life cycle; and
- the availability of background social footprint information in the society where an operational initiative will occur.

These aspects can only be addressed when it is known both what information is needed from the project, i.e. the contributing interventions to the midpoint category, as well as with what social footprint information it should be characterised and normalised. Table 6-6 and Table 6-7 summarise the proposed project and social footprint information required.

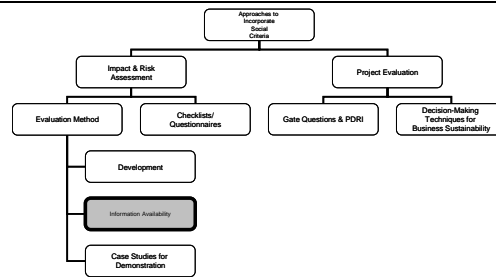


Table 6-6: Information Required for Social Footprint

Midpoint Category	Assessment Method	Units of Equivalence	Social Footprint Information Needed
Permanent positions	Quantitative	Number of employment opportunities equivalent to employment type	Employment by type, i.e. position and full-time/part-time, for municipality
Possible health and safety incidents	Quantitative	Fatality or disability injury rate	Industry fatal accident or disability injury rate
R&D capacity	Quantitative	Expenditure on R&D capacity	Municipality budget on R&D or industry budget
Comfort level	Quantitative	Kilo tons of pollutants emitted per annum	Emissions and noise level of municipality as well as acceptable levels by standards, e.g. SABS standards
Aesthetics	Qualitative	Level of perceived acceptability	Perceived level of aesthetic acceptability by community
Local employment	Quantitative	Fraction of employable community hours	Employment by type for community or municipality
Local population	Quantitative	Level of short-term demographic changes	Demographic profile of community or municipal area
Access to health facilities	Quantitative	People per qualified doctor	National ratio of people per qualified doctor or international ratio

Table 6-6: Information Required for Social Footprint (continues)

Access to education	Quantitative	Literate adults ¹³	Literate adults in municipality area or region
Availability of acceptable houses	Quantitative	Zoned residential area per capita	Size of municipality area
Availability of water services	Quantitative	Water of drinking quality per capita	Water of drinking quality used by municipality
Availability of energy services	Quantitative	kWh of electricity per capita	Electricity usage by municipality
Availability of waste services	Quantitative	Capita per G:h landfill site	Landfill sites (type and size) used by municipality.
Pressure on public transport services	Quantitative	Seat kilometres per capita	Public Transport seats available in municipal area.
Pressure on transport network	Quantitative	Ton kilometres per capita	Ton kilometres per capita (in region or nationally).
External value of purchases	Quantitative	Fraction of purchased locally-manufactures goods	Gross Domestic Product (GDP) per region and/or per industry.
Migration of clients	Qualitative	Level of client portfolio	
Improvement of socio-environmental services	Quantitative	Expenditure on SE services per capita	Expenditure on Environmental Services by the region.
Change in relationships	Qualitative	Level of stakeholder trust	Perceived stakeholder trust based on community questionnaires or surveys.

¹³ Literate adults are defined as the percentage of people aged 15 and above who can, with understanding, both read and write a short, simple statement on their everyday life.

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-7: Project and Additional Information Required

Midpoint Category	Assessment Method	Intervention	Intervention Information	Information Classification	Additional Information Required
Permanent positions	Quantitative	Nature of jobs	Number and type of employment opportunities created or destroyed	Quantitative	Characterisation or conversion factors for different types of employment
Possible health and safety incidents	Quantitative	Health and safety incidents	Risk of health and safety incidents with prediction of number based on similar previous undertakings	Quantitative	Guidelines and checklists
R&D capacity	Quantitative	Investment in R&D	Investment by project in R&D as part of project budget	Quantitative	Conversion factor of money into capability
Comfort level	Risk/ Quantitative	Smell	Predicted emissions that can smell or risk of emissions	Quantitative	Characterisation factors for interventions
		Noise	Predicted noise levels or risk of noise	Quantitative	
Aesthetics	Qualitative	Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Structure and location	Risk of structure and location having a negative impact on aesthetics of community	Qualitative	Guidelines or checklists and characterisation factors
Local employment	Quantitative	Permanent positions	Number of permanent job type equivalents	Quantitative	Characterisation factors and conversion factors for indirect employment
		Indirect employment opportunities	Calculation: permanent positions multiplied by conversion factor	Quantitative	

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-7: Project and Additional Information Required (continues)

Local population	Quantitative	Migratory influx	Predicted change in local population	Quantitative	Impact prediction scoring guidelines
Access to health facilities	Quantitative	Employee benefits	Monetary value of employment benefits or description thereof	Quantitative/ Qualitative	Characterisation factor and/or scoring guidelines
		Investment in health facilities	Monetary value	Quantitative	Characterisation factor
		Health and safety Incidents	Risk of health and safety incidents with prediction of number based on similar previous undertakings	Quantitative	Guidelines and checklists
		Local taxes	Monetary value	Quantitative	Characterisation factor
		National taxes	Monetary value	Quantitative	Characterisation factor
		Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
Access to education	Quantitative	National taxes	Monetary value	Quantitative	Characterisation factor
		Local taxes	Monetary value	Quantitative	Characterisation factor
		Investment in education	Monetary value	Quantitative	Characterisation factor
		Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-7: Project and Additional Information Required (continues)

Availability of acceptable housing	Quantitative	Employee benefits	Monetary value of employment benefits or description thereof	Quantitative/ Qualitative	Characterisation factor and/or scoring guidelines
		Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Investment in housing	Monetary value	Quantitative	Characterisation factor
		National taxes	Monetary value	Quantitative	Characterisation factor
		Local taxes	Monetary value	Quantitative	Characterisation factor
Availability of water services	Quantitative	Investment in water services	Monetary value	Quantitative	Characterisation factor
		Water usage	Predicted water usage	Quantitative	Characterisation factor
		Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Local taxes	Monetary value	Quantitative	Characterisation factor
Availability of energy services	Quantitative	Local taxes	Monetary value	Quantitative	Characterisation factor
		Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Energy usage	Predicted energy usage	Quantitative	Characterisation value
		Investment in energy services	Monetary value	Quantitative	Characterisation factor
Availability of waste services	Quantitative	Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Local taxes	Monetary value	Quantitative	Characterisation factor
		Waste generated	Predicted waste that will be generated	Quantitative	Characterisation factor
		Investment in waste services	Monetary value	Quantitative	Characterisation factor

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-7: Project and Additional Information Required (continues)

Pressure on public transport services	Quantitative	Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		Local taxes	Monetary value	Quantitative	Characterisation factor
		National taxes	Monetary value	Quantitative	Characterisation factor
		Transport of people	Predicted number of additional people that will use public transport	Quantitative	Characterisation factor
Pressure on transport network	Quantitative	Local population	Predicted change in local population	Qualitative	Scoring guidelines and characterisation factors
		National taxes	Monetary value	Quantitative	Characterisation factor
		Local taxes	Monetary value	Quantitative	Characterisation factor
		Transport of people	Predicted number of additional people that will use public transport	Quantitative	Characterisation factor
		Transport of goods	Predicted number of additional tons of goods that will be transported	Quantitative	Characterisation factor
		Investment in transport network	Monetary value	Quantitative	Characterisation factor
External value of purchases	Quantitative	Nature of purchases	Monetary value	Quantitative	
Migration of sales	Qualitative	Nature of sales	Monetary value with qualitative description	Quantitative/ Qualitative	Scoring guidelines

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-7: Project and Additional Information Required (continues)

Improvement of socio-environmental services	Quantitative	Investment in socio-environmental services	Monetary value	Quantitative	Characterisation factor
Change in relationships	Qualitative	Investment in energy services	Monetary value	Quantitative	Characterisation factor and scoring guidelines
		Investment in waste services	Monetary value	Quantitative	
		Investment in water services	Monetary value	Quantitative	
		Investment in regulatory and public services	Monetary value	Quantitative	
		Investment in housing	Monetary value	Quantitative	
		Investment in education	Monetary value	Quantitative	
		Investment in health facilities	Monetary value	Quantitative	
		Investment in transport network	Monetary value	Quantitative	
		Investment in socio-environmental services	Monetary value	Quantitative	
		Investment in stakeholder participation initiatives	Monetary value	Quantitative	

6.2.1.2.1 Project Information

The Delphi technique [267] was used to determine the availability of the social information necessary to use the evaluation method. The same group of project management experts that participated in the first Delphi technique (see section 5.3), took part in this study. These experts were handled anonymously. Two iterations of questionnaires and feedback reports were executed.

The first round of questionnaires was completed during personal interviews with each respondent to ensure a clear understanding of the required information (as shown in Table 6-7). The questionnaires contained a list of social information needed and asked the open-ended question “Before which decision point (gate) in the project life cycle is the information available or can it be predicted?” using the project life cycle showed in Figure 1-4. The results were analysed and presented in the second questionnaire as an answer statement to the question. Respondents had to indicate whether they agree or disagree. Where respondents disagreed, they had to indicate when in the project life cycle they believe the information would be available. The second questionnaire resulted in consensus and was followed by the final feedback report. Examples of the questionnaires are shown in Appendix N. The results of the Delphi questionnaires are summarised in Table 6-8.

Table 6-8: Summary of Results from Delphi Technique on Project Information Available

Social Information Needed	Intervention¹⁴	Phase in which Information is Available	Type: Prediction/ Certainty
Number and type of jobs created	Nature of jobs	Feasibility phase	Prediction of types and numbers
Health and safety risks (possible incidents)	Health and safety incidents	Feasibility phase	Prediction of risk involved
Number of specific skilled personnel required	Nature of jobs knowledge level	Feasibility phase and development phase	Prediction of types and numbers
Expenditure on R&D	Investment in R&D	Pre-feasibility, if applicable	Prediction of necessity and possible cost
Environmental risks e.g. smells	Smell Noise Other nuisance issues	Feasibility phase	Initially it is only possible to predict risk - detail risk figures follow later
Nuisance risks to public	Structure location	Feasibility phase	Prediction of risks

¹⁴ Interventions associated with the information have not been listed in the Delphi questionnaire.

Table 6-8: Summary of Results from Delphi Technique on Project Information Available
(continues)

Social Information Needed	Intervention¹⁴	Phase in which Information is Available	Type: Prediction/ Certainty
Percentage of jobs that can be filled by local people	Permanent positions	Feasibility phase	Prediction of types and numbers
Possible inflow of people	Migratory influx	Pre-feasibility phase and feasibility phase	Prediction of risk
Project will invest in housing	Investment in housing	Feasibility phase	Prediction of possibility
Water usage of project	Water usage	Feasibility phase	Prediction of numbers
Energy usage for project	Electricity usage	Feasibility phase	Prediction of numbers
Waste generated by project	Waste generated	Feasibility phase	Prediction of numbers
Pressure on public transport services	Transport of people	Feasibility phase	Prediction of possible impact - low, medium or high
Pressure on transport network by additional people transfers, e.g. company buses	Transport of goods	Feasibility phase	Prediction of possible impact - low, medium or high. Later more information
Percentage of goods required for project that can be purchased locally	Nature of purchases	Development phase (sometimes feasibility phase)	Prediction of types and numbers
Possibility of clients migrating to project location	Nature of sales	Pre-feasibility phase	Possibilities will be known or predictable
Knowledge about whether the project should invest in macro social environmental aspects, e.g. monitoring	Investment in socio-environmental services	Development phase	Predictions

Table 6-8: Summary of Results from Delphi Technique on Project Information Available
(continues)

Social Information Needed	Intervention¹⁴	Phase in which Information is Available	Type: Prediction/ Certainty
Information regarding stakeholders	Investment in stakeholder participation initiatives	Feasibility phase and development phase	Predictions

The Delphi case study indicates that most information can be predicted during the feasibility phase, i.e. before Gate 3: Business Case Gate, and will be known with more certainty as the project progresses. However, not all of the information is currently collected. All of the information will also not be collected for all sizes and types of projects. This case study also confirmed the results of the Delphi technique case study in Chapter 5, which concluded that a distinction between greenfield and brownfield projects might be necessary in the process industry.

6.2.1.2.2 Social Footprint Information

South Africa does currently not have a centralised statistics database from which statistics can be extracted. Different organisations are collecting statistics around the country in various details. Statistics South Africa launched a project in 2005, which attempted to centralise a database to provide information on the kind of statistics available from different bodies across the country [273]. The database is, however, not available yet. The following organisations have been approached to gather social footprint information:

- Statistics South Africa [274];
- Department of Transport [275];
- Council for Scientific and Industrial Research (CSIR) [276];
- Department of Health [277];
- Department of Labour [278];
- NOSA International [279]; and
- Municipal Demarcation Board South Africa [280] and individual municipalities.

The statistical information available from these sources are summarised in detail Appendix O and briefly in Table 6-9. The searches for statistics indicated that statistics on municipal level are mostly collected in the five-yearly census [273] and are restricted predominantly to household statistics. Statistics South Africa's Labour force survey does provide industry statistics. The statistical information available from municipalities depends on the area's size, the council's environmental initiatives and whether a strategic environment assessment has been conducted in the area..

Table 6-9: Summary of Social Footprint Information Available for Midpoint Categories

Midpoint Category	Information Available	Level	Frequency of Updates
Permanent positions	Employment percentage (by gender)	Municipality or industry	Five-yearly or bi-annually
	Employed, unemployed and not economically active	Municipality	Five-yearly
Possible health and safety incidents	NOSA does not make industry average information available [281]. However, the complaint commissioner publishes information with a five year lead time, namely number of accidents per extent of disablement according to industry, magisterial district, province or national and average days lost due to accidents [282]		
R&D capacity	No statistical information on R&D expenditure on a provincial or municipal level is available. The national budget's allocation to the Department of Science and Technology can be used as a baseline but is not a true representation of government R&D expenditure, since other departments also undertake R&D projects		
Comfort level	Air pollution levels	Some municipality	Depends on source
Aesthetics	Statistics are not available but the company can gather information through community surveys		
Local employment	As for permanent positions		
	Gross salaries and wages	Industry	Annually
Local population	Population breakdowns	Provincial and national	Annually and bi-annually
	Migration streams	Provincial	Annually
	Immigrant and emigrant figures	National	Annually
	Population breakdown	Municipality	Five-yearly
	Citizenship statistics	National	Five-yearly
Access to health facilities	Life expectancy at birth	National	Annually
	Medical Aid coverage by population group	National	Annually
Access to education	Adult literacy rate	National	Five-yearly
	Highest education levels	Provincial	Annually
	Education institutions attended	Municipality	Five-yearly
Availability of acceptable houses	Dwelling types, household size and number of rooms	Municipality	Five-yearly
Availability of water services	Water used by municipality	Municipality	On request

Table 6-9: Summary of Social Footprint Information Available for Midpoint Categories (continues)

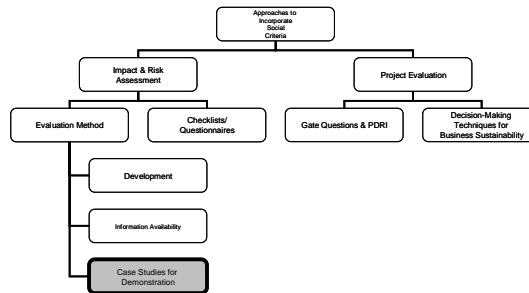
Midpoint Category	Information Available	Level	Frequency of Updates
Availability of energy services	Energy used by municipality	Municipality	On request
Availability of waste services	Household refuse statistics	Municipality	Five-yearly
	Available landfill site	National	Five-yearly
Pressure on public transport services	Municipal, provincial and national statistics are not available. However, some individual municipalities are starting to collect data, especially those cities participating in CEROI ¹⁵ , since “Access to public transport” is one of their indicators [283]		
Pressure on transport network	Volumes of good transported in the transport network	National	Every three to five years
External value of purchases	GDP	Provincial/Industry	Quarterly/Annually
	Purchases	Industry	Annually
	Turnover	Industry	Annually
Migration of clients			
Improvement of socio-environmental services	Expenditure on environmental protection	Provincial	Annually
Change in relationships	Statistics are not available, but the company can gather information through community surveys		

6.2.1.2.3 Conclusion

The social footprint information required is not available in the sought format for the SII calculation procedure. This implies that certain units of equivalence will have to be changed according to the available information. However, the relevant information will most probably differ from project to project, depending on the region in which the project is executed as well as the type of project. To define new units of equivalence for the relevant midpoint categories, the evaluation method is applied to three different case studies, each representing an asset life cycle phase.

¹⁵ CEROI is the City Environmental Reports on the Internet initiative supported by UNEP. Four South African cities are currently involved.

6.2.1.3 Case Studies to Test Information Availability and Demonstrate Evaluation Method



The SII evaluation method will be demonstrated below using equation 6-2.

$$SII_G = \sum_C \sum_X Q_X \cdot C_C \cdot N_C \cdot S_C \quad \mathbf{6-2}$$

Where:

- SII_G = SII calculated for a main area of protection (Level 4 of framework see Figure 3-6) through summarising all impact pathways of the life cycle inventory constituents for the areas of protection
- Q_X = Quantity of LCI constituent X, i.e. the impact in units
- C_C = Characterisation factor for an impact category C (of constituent X) within the pathway, if necessary
- N_C = Normalisation factor for the impact category based on the social footprint, i.e. the inverse of the target state of the impact category

And:

$$S_C = \frac{C_S}{T_S} = \text{Significance or relative importance of the impact category based on the distance-to-target method, i.e. current state of social footprint (C_S) divided by the target state for social footprint (T_S)}$$

6.2.1.3.1 Construction

The construction project involving the open cast mine discussed in Chapter 4 (see section 4.1.2) will be used for demonstration purposes. The project is handled hypothetically as a stand alone project and the impacts of the associated underground mine closure are not taken into account. The project information retrieved from the environmental management programme [230], specialist report [284] and publications of StatsSA are summarised in Table 6-10 and Table 6-11.

Table 6-10: Summary of Project Information Available for the Construction Project

New Mine: Project Information		
	Construction	Operation
Employment opportunities created	450 people [230:138]	300 employment opportunities over a 20 year life span [230:121]
Employment opportunities destroyed	20 employment opportunities on farms [230:267]	
Indirect employment opportunities	Multiplier effect of 2.8: 1260	Multiplier effect of 2.8: 840
Contribution to GDP (added or lost)	R52 million per annum (in 1999/2000) [284:32]	
Reduction in property values	9-19% (year 1-10) [230:258]	2-6% (after year 10 till mine closure) [230:258]
Increases in ambient noise levels (dBa) on average	<2 [230: 195]	< 2 [230: 238-239]
Dust (mg/day/m ²)	Between <50 – 250 [230:187]	<100 [230:231]

Table 6-11: Summary of Social Footprint Information Available for the Construction Project

Social Footprint Information			
Labour Force: Potentially Economically Active in Region[284: 55]			
Total	Employed	Unemployed	Not Economically Active
736,721	308,826	149,335	278,560
100%	41.9%	20.3%	37.8%
Estimated Ambient Noise Level (dBA) [230: 97]			
Time of Day	Typical Weekday	Typical Weekend	
Morning	50,9	49,2	
Midday	46,9	48,0	
Evening	41,4	46,9	
Night	34,7	42,3	
Over 24 hours	44,6	46,8	
Sasolburg GGP (1991) Due to Kind of Activity [284: 59]			
Mining and quarrying		R259,677,000.00 per annum	
Dust Pattern [230]			
March - July		Low	
August - December		Higher	
January - February		Lower	
Dust Figures [230]			
September	Moderate	251-500 mg/day/m ²	
October (2 sites)	Heavy	501-1200 mg/day/m ²	
November (1 site)	Heavy	501-1200 mg/day/m ²	

The calculated Social Impact Indicators for the project, using equation 6-2, is shown in Table 6-12. The project will have an overall positive social impact, although job creation could not outweigh the negative impact on the comfort level on the neighbourhoods in a close vicinity to the plant. The overall positive impact is mainly due to the large contribution the project will make to the Gross Geographic Product (GGP) of a relative small area, which relies strongly on mining.

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 6

Table 6-12: Social Impact Indicators for a Construction Project

Area of Protection	Intervention	Mid-point Category	Normalisation Value (T_S^{-1})	Significance Value (C_S/T_S)	Midpoint Indicator Value	SII Value
Internal Human Resources	Employment Creation	Permanent Positions	2.18264×10^{-06}	0.455791741	$2.98E \times 10^{-04}$	$2.98E \times 10^{-04}$
External Population	Permanent Positions	Local Employment	1.11359×10^{-09}	0.674055627	1.68×10^{-03}	-7.48×10^{-02}
	Noise & Dust generated	Comfort Level ¹⁶	2.19×10^{-02} 1.09×10^{-03}	1 1	-4.38×10^{-02} -1.09×10^{-01}	
Macro Social Performance	Nature of Sales	External value of purchases ¹⁷	3.85×10^{-03}	1	2.0×10^{-01}	2.0×10^{-01}
Stakeholder Participation						
Final Social Impact Value						1.26×10^{-01}

¹⁶ Since no characterisation factors for noise to dust or dust to noise is available, the midpoint category was calculated as a weighted average with equal weights to each constituent.

¹⁷ The units of equivalence have been changed to contribution to GDP due to the information available

6.2.1.3.2 Operation

The chemical manufacturing facility in the Mpumalanga province discussed as a case study in Chapter 4 (see section 4.2.1.2) is used to demonstrate the SII for the operational phase. The facility was chosen since a strategic environmental assessment for the area as well as the company's sustainable development report is available [285, 263]. Information obtained from these sources together with stated assumptions are summarised in Table 6-13.

Table 6-13: Summary of Information Available for Operation Phase

Intervention	Plant Information¹⁸	Social Footprint Information
Employees	± 7000	Target: To have everyone employed, excluding people who prefer to be not economically active. Govan Mbeki Municipality ¹⁹ : Employed: 60681 Unemployed: 40189 Total Labour Force: 100870
Indirect employment creation	±21000 (applying the rule of used in SIA (see Chapter 4))	Employable community work hours - assuming all full-time employees - 40 hours - 49 weeks (3 weeks leave)
Total injuries	541	13 019 ²⁰
Disabling injury rate (no/200,000 hours)	0.59	
Health and safety incidents (spillages)	70	
Atmospheric emissions:		
SO ₂	197 kilo ton	
NO _x	138.8 kilo ton	
VOC	394 kilo ton	
H ₂ S	90 kilo ton (Permit: 101)	
CO ₂	44 109.2 kilo ton	

¹⁸ All plant information has been obtained from the sustainable development report, where the average of data available has been used unless otherwise stated.

¹⁹ Census 2001 information.

²⁰ Total number of accidents in the Mpumalanga province in 1999 according to the Compensation Fund Statistics Report [282].

Table 6-13: Summary of Information Available for Operation Phase (continues)

Atmospheric Emissions (Concentration Information from SEA)		
NO _x	1 Hour Maximum NO ₂ concentration average of 5 receptor points: 539.4µg/m ³	Acceptable target (WHO guideline): 200µg/m ³ (1-hour NO _x average) [285:80] Current State: 1 hour maximum NO ₂ concentration based on maximum predicted concentration: 801µg/m ³ [286: Appendix A page 1]
SO ₂	24-hour maximum SO ₂ Concentration based on average of five receptor points: 127.4µg/m ³ [285:237]	Acceptable target (WHO guideline): 125µg/m ³ [285:80] Current State: 24 Hour Maximum SO ₂ Concentration based on maximum predicted concentration: 152µg/m ³ [286: Appendix A page 1]
Water usage - river water	89 963 m ³	Target: (1:200 year firm yield) 150 million m ³ per annum Current (predicted 1998/2000 average) 183.6 million m ³ per annum [285: 160-161]
Financial turnover	R7,835.00 million	R49 707 million ²¹
Transportation incidents	12	
Complaints	36	

Table 6-14 shows the calculated SIIs for the project, using equation 6-2. It is shown that the operation of the plant has an overall negative social impact. The positive contribution to GDP and employment cannot outweigh the negative impacts on comfort level, people (in the form of health and safety accidents) and the water usage. The biggest social impact is the impact on comfort level due to atmospheric emissions, i.e. secondary environmental impacts.

²¹ According to GDP statistics of StatsSA - Publication Number: P0441 - GDP; Average of 1995 to 2000.

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-14: Social Impact Indicators for the Operational Phase

Area of Protection	Intervention	Mid-point Category	Normalisation Value (T_s^{-1})	Significance Value (C_s/T_s)	Midpoint Indicator Value	SII Value
Internal Human Resources	Employment Creation	Permanent Positions	9.91375×10^{-06}	0.601576286	0.04174714	1.92×10^{-04}
	Health & Safety Accidents	Possible Health & Safety Incidents ²²	7.68×10^{-05}	1	-0.041554651	
External Population	Permanent Positions	Local Employment	5.05753×10^{-09}	0.601516653	0.125237887	-1.84821
	Atmospheric Emissions (SO ₂)	Comfort Level ²³	0.008	1.216	-1.2393472	
	Water Usage	Availability of water services	0.006666667	1.2240	-0.73409808	
Macro Social Performance	Nature of Sales	External value of purchases ²⁴	2.01179×10^{-05}	1	0.157623675	0.158
Stakeholder Participation						
Final Social Impact Value						-1.690018

²² The units of equivalence have been changed to annual accidents due to the information available.

²³ Comfort level is measured quantitatively in concentration SO₂.

²⁴ The units of equivalence have been changed to contribution to GDP due to the information available.

6.2.1.3.3 Decommissioning

Decommissioning the acrylic fibre plant in the Ethekwini municipal district of South Africa's KwaZulu Natal province discussed as a case study in Chapter 4 (see section 4.3.2) is used for demonstration purposes. The specific project was chosen, since project and social footprint information is available, due to the following reasons:

- the plant's social and environmental data during its operational phase is available in the company's sustainable development report [263];
- a Strategic Environmental Assessment has been completed for the Durban South basin area where the plant was located [287]; and
- Ethekwini Municipality have other sustainable development indicator data available on their internet website [288].

The project information retrieved from the sustainable development report is summarised in Appendix P. Some information is provided as per kilogram of product produced. The report states that the factory had an annual production capacity of 36,000 tons. An efficiency of 80% is assumed to calculate project impact figures from the provided information. In the same way, a fixed annual turnover and number of employees are assumed, based on the figures provided in the sustainable development report. Social footprint information are also summarised in Appendix P. Table 6-15 provides a summary of information available to apply the evaluation method.

Table 6-15: Summary of Information Available for the Decommissioning Phase

Intervention	Project Information	Social Footprint Information
Nature of jobs	250 employment opportunities lost (5% relocated = 12)	Ethekwini unemployment: 28% Durban South basin unemployment: 52% Ethekwini employment: 37% Target: To have everyone employed, excluding people who prefer to be not economically active
Indirect employment destruction	±750 (applying the rule of used in SIA (See Chapter 4))	Employable community work hours - assuming all full-time employees - 40 hours - 49 weeks (3 weeks leave)
Work-hours lost due to injuries	475.25 hours	

Table 6-15: Summary of Information Available for the Decommissioning Phase (continues)

Disabling injuries	6.5	Although social footprint information is available, the definition of disabling injuries is not given and therefore information is not comparable
Disabling injury rate (no/200 000 hours)	2.375	
Health and safety incidents (spillages)	0.75 per annum	
<i>Atmospheric Emissions:</i>		<i>Ethekwini Emissions</i>
SO ₂	0.488 kilo ton per annum	54.50 kilo ton per annum
NO _x	0.111 kilo ton per annum	54.50 kilo ton per annum
VOC	0.005 kilo ton per annum	No information available
Water usage	1 429 200 kilo litre per annum	Ethekwini - with water loss: 168 090 ML - without water loss: 280 149 ML
Energy usage	48.384 GWh per annum	Ethekwini: 9098 GWh per annum
Solid waste:	5.25x10 ³ m ³ per annum	
General/Domestic	2.575x10 ³ m ³ per annum 1545 tons per annum ²⁵ [289]	Durban South basin: 45 000 ton per annum
Non-Hazardous Industrial	2.675x10 ³ m ³ per annum	
Nature of sales	Annual turnover of R500 million	GDP of KwaZulu Natal: R113,047.00 million
Stakeholder complaints	0.5 per annum	

SIIs calculated for the project, using equation 6-2, are shown in Table 6-16. The decommissioning project has an overall positive social impact since the positive impact on resources and comfort level outweighs the negative impact on the economy due to employment termination. The secondary impacts of employment termination, for example social pathologies, have not been accounted for. The score is thus showing an impaired social picture.

²⁵ The South African Department of Water Affairs and Forestry's minimum requirements for waste density was used for the conversion (See Appendix P) [289].

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-16: Social Impact Indicators for a Decommissioning Project

Area of Protection	Intervention	Mid-point Category	Normalisation Value (T_S^{-1})	Significance Value (C_S/T_S)	Midpoint Indicator Value	SII Value
Internal Human Resources	Nature of Jobs	Permanent Positions	7.27825×10^{-07}	0.569838066	-1.09×10^{-04}	-1.09×10^{-04}
External Population	Permanent Positions	Local Employment	3.71339×10^{-10}	0.569838066	-4.20×10^{-04}	5.47×10^{-02}
	Energy Usage	Availability of Energy Services	0.000109909	1	5.32×10^{-03}	
	Water Usage	Availability of Water Services	3.56952×10^{-09}	1	5.10×10^{-03}	
	Waste generated	Availability of waste services ²⁶	2.22222×10^{-05}	1	3.43×10^{-02}	
	Atmospheric Emissions (SO ₂ & NO _x)	Comfort Level ²⁷	0.018350644	1	1.04×10^{-02}	
Macro Social Performance	Nature of Sales	External value of purchases ²⁸	7.98335×10^{-06}	1	-3.99×10^{-03}	-3.99×10^{-03}
Stakeholder Participation						
Final Social Impact Value						5.06×10^{-02}

²⁶ Based on information available, the units of equivalence have been changed to domestic waste generated in tons.

²⁷ Comfort level is measured quantitatively in kilo tons SO₂ per annum using CML characterisation factors.

²⁸ The units of equivalence have been changed to contribution to GDP due to the information available.

6.2.1.4 Conclusion

The case studies indicated that:

- all midpoint category indicators cannot be calculated either due to a lack of project information or due to a lack of social footprint information;
- the limitation of available social footprint information resulted in only some midpoint category indicators being calculated, i.e. permanent positions, water usage, energy usage, nature of sales and comfort level, which leads to an impaired social picture. In addition, the midpoint category indicators for water usage, energy usage and comfort level are much higher than permanent positions, thus resulting in a net negative social impact not representing the true social picture;
- the units of equivalence cannot be fixed, since it depends on the available information. This will complicate indicator comparison between various projects; and
- to determine whether social impacts are positive or negative is not straightforward. Although conventional methods that regard resource usage as a negative impact were followed, it can be argued that company resource use may result in infrastructure to be built, which benefits the community.

The case studies together with the whole evaluation method were presented to a focus group. The Focus Group Technique²⁹ [290] was chosen to determine project management personnel's perspectives, opinions and concerns with regards to the evaluation method. The technique was thus applied as a confirmatory tool [291] with the aim of determining the appropriateness and usefulness of the evaluation method. The focus group consisted of senior business personnel involved in project management in the process industry. A mini group approach (only 4 to 6 members in the group) was chosen due to the fact that more in-depth knowledge can be gained from a smaller group [292]. The following is concluded from the focus group:

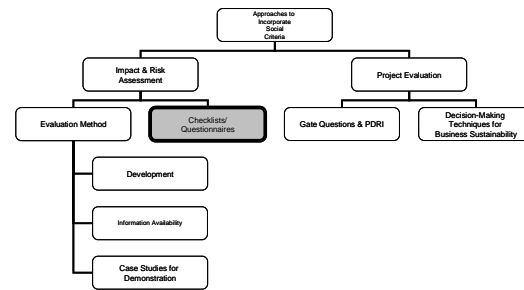
- the idea of assigning quantitative values to social impacts and concerns appealed to the participants;
- however, the participants did not feel comfortable with the LCIA methodology used as a basis for the evaluation method. This can be due to the unfamiliarity of LCIA in the project management field;
- participants were concerned about the social footprint data needed for the evaluation; and
- incorporating the information into decision-making was also questioned, based on current decision-making techniques, which prefer monetary values.

²⁹ The Focus Group Technique is a social science research technique, which provides emic data (data that arise in a natural or indigenous form and are minimally imposed by the researcher or the research settings). The technique consists of a small group of people (maximum 10 people) who enters a 90 to 120 minute discussion led by a trained facilitator or moderator. The group can be recruited based on common demographics, attitudes or skill levels. There are various applications for the technique, especially in the marketing field.

It can be concluded that the evaluation method should not immediately be applied or used in project management due to resistance to the method and a lack of social project and footprint information. It is an international problem that current available statistics are incapable of providing an integrated view of various dimensions of sustainable development [293], including the social dimension. The lack of social information parallels the situation regarding environmental information in the middle 1980s when researchers identified a lack of quality information as a problem and various calls for environmental data banks emerged [294, 295]. Since the state of development for indicators or measurements for social business sustainability parallels that of environmental performance approximately 20 years ago [158], and the attention the dimension received from business had been marginal until the late 1990s [93, 89, 157] it is not surprising that the evaluation method proposed can be overwhelming to project managers. It is therefore proposed that social sustainability should be incorporated into project management methodologies in phases, starting with questionnaires and checklists following more traditional risk approaches. In future, the proposed evaluation method can be implemented when information is more readily available.

6.2.2 Checklists and Questionnaires

Reservations was expressed towards a checklist or questionnaire approach in that it may be used instead of following a proper social impact assessment scoping process [166]. However, the checklists and questionnaires aimed to ensure a pro-active approach with regards to addressing social criteria during the project life cycle and thus to increase awareness of possible social consequences that the project can have.



An extensive literature search indicated that not many social impact assessment checklists or questionnaires are available within the public domain. Therefore, specific checklists and/or questionnaires have been developed for the individual project life cycle phases using the research conducted for the evaluation method as basis. The nature of information requested changes as the project progresses and more detail information is available of the associated asset and product life cycle. The magnitude and significance of impacts are described using the systematic manner proposed by the South African Department of Environmental Affairs and Tourism (DEAT), namely:

- extent or spatial scale of impact;
- intensity and severity of impact;
- duration of impact;
- mitigatory potential;
- acceptability;
- degree of certainty;
- status of the impact; and
- legal requirements [296].

The checklists and questionnaires do not replace the social impact assessment study, which is normally completed as a part of the EIA in the development phase, but can provide input to the study. The checklists and questionnaires for individual phases are attached in Appendix Q. A summary of the main activities and deliverables prompted by the questionnaires and checklists are shown in Figure 6-4 and Figure 6-5.

The two Delphi technique applications (section 5.3 and section 6.2.1.2.1) concluded that greenfield and brownfield projects required different approaches. In spite of this, the questionnaires and/or checklists are generic and contain detailed social questions and activities, which might not always be relevant to brownfield projects. It is the project manager's prerogative to ignore some of the social aspects. In a greenfield project, the need might arise to address social issues earlier, which would imply that checklists and questionnaires of future phases are used earlier. A webbased computer package has been designed to assist with the implementation of the checklists in the project life cycle. The package

distinguishes between brownfield and greenfield projects by providing references to additional information sources for Greenfield projects. (See Appendix R).

Sustainable project life cycle management: Development of social criteria for decision-making
Chapter 6

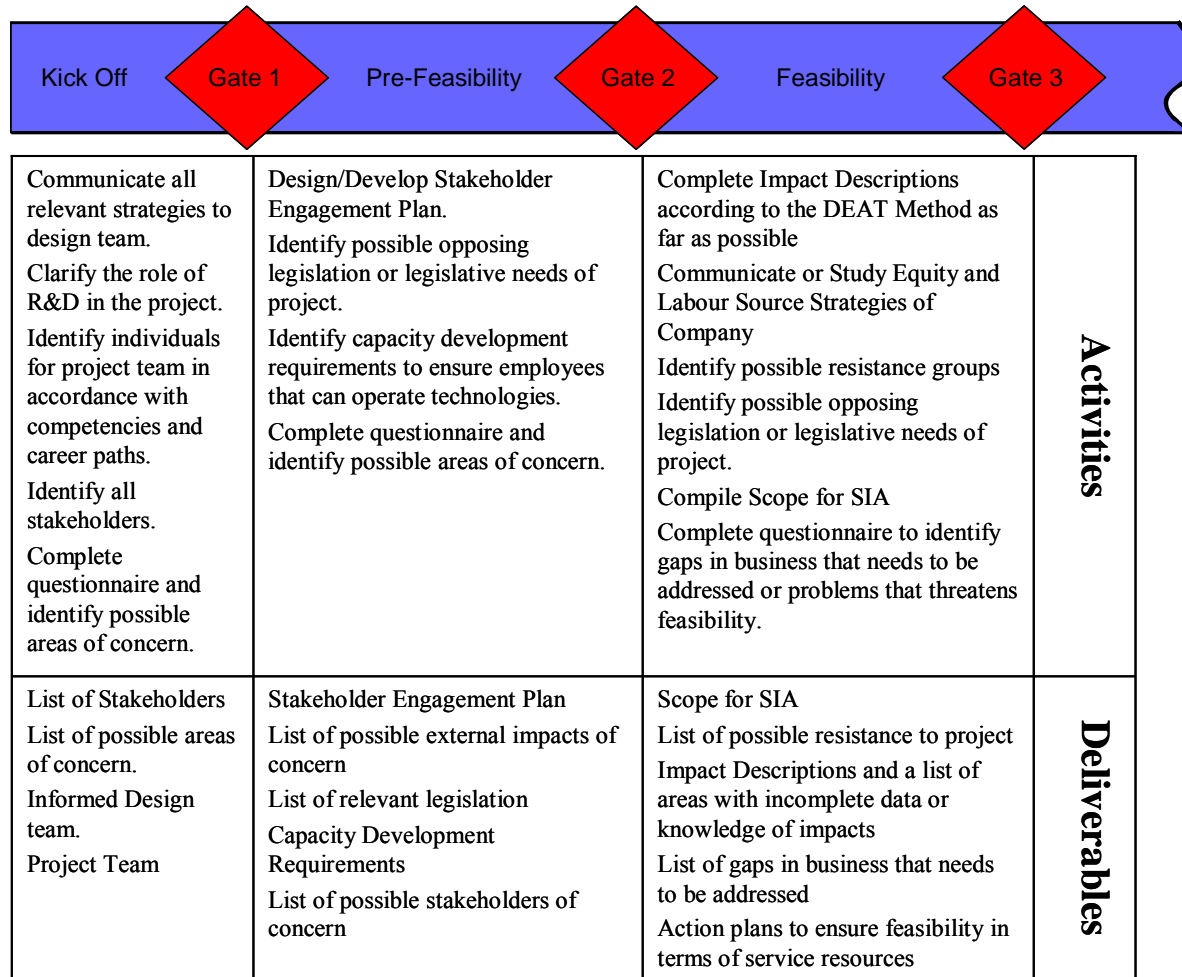
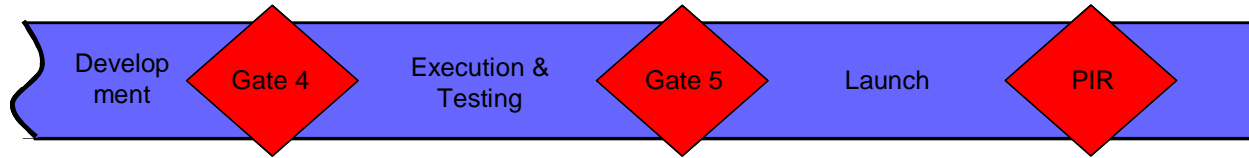


Figure 6-4: Summary of Proposed Activities and Deliverables Prompted by Questionnaires and Checklists for Phase 1 to 3

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6



<p>SIA performed</p> <p>Complete questionnaire</p> <p>Formalize Health & Safety Practices</p> <p>Develop Environmental Enforcement Plan</p>	<p>Appointment of employees in accordance with equity and labour strategy.</p> <p>Adoption of security and disciplinary practices.</p> <p>Execution of Environmental Enforcement Plan</p> <p>Development of measures to measure actual impacts</p> <p>Identification & Mitigation of additional social problems.</p>	<p>Adopting strategies and business practices for future functioning as an independent unit.</p> <p>Initiation of actions to build a long-terms stakeholder relationships with stakeholder.</p>	<p>Activities</p>
<p>Completed SIA</p> <p>List of critical social concerns</p> <p>Predicted social impacts</p> <p>List of possible problems that threatens strategy adherence of the project.</p> <p>Environmental Enforcement Plan</p>	<p>Employee Force in accordance with equity and labour source strategies</p> <p>Impact Measures</p>	<p>A functioning asset in accordance with project objectives</p>	<p>Deliverables</p>

Figure 6-5: Summary of Proposed Activities and Deliverables Prompted by Questionnaires and Checklists for Phase 4 to 6

6.2.3 Conclusion

Questionnaires and checklists promoting social impact and risk identification should be incorporated in project management methodologies as the first phase of addressing social business sustainability. In a subsequent phase, the proposed evaluation method can be implemented in the project management methodologies. However, this can only occur once the paradigm shift of internalising external social impacts has taken place and the database of social information has been broadened, which would solve most problems associated with the method. Figure 6-6 shows at which stages in the life cycle the various proposed tools could be used.

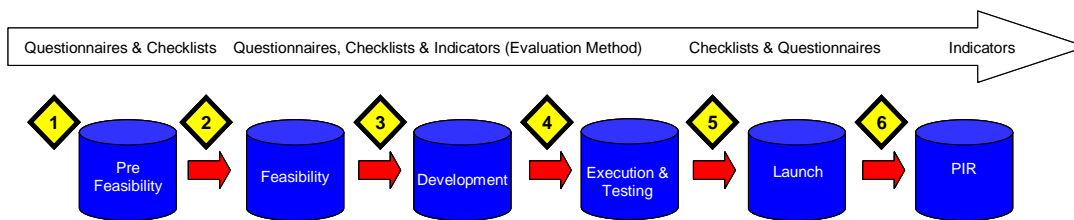
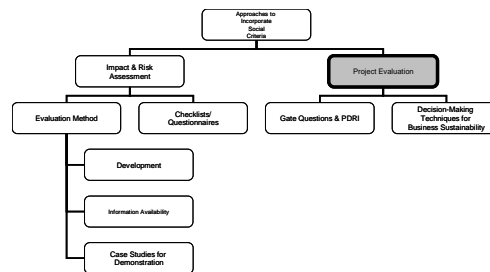


Figure 6-6: The Use of Proposed Methods over the Life Cycle

6.3 Project Evaluation Methods

In the project life cycle management methodology introduced in Chapter 1, six decision points or gates have been identified over the project life cycle [see Figure 1-4]. The project's sponsors and other stakeholders evaluate the project at these decision points or gates. The primary objectives of these project appraisals are:

- estimating project outcomes before committing significant funds;
- comparing estimated outcomes with other investment alternatives;
- comparing forecasted return on investment with the cost of financing; and
- the risk assessment regarding project failure [131].



According to Kerzner (98: 559), companies identified four possible decisions that can be taken at each decision point, namely:

- proceed to the next phase based on an approved funding level;
- proceed to the next phase **but** with a new or modified set of objectives;
- postpone decision to proceed based on a need for additional information; and
- terminate the project.

These gate reviews are normally preceded by a preliminary assessment by the project team to determine whether the project has completed the expected deliverables for the specific phase and is ready to enter the gate. These preliminary assessments are referred to as gate readiness reviews.

Industry project appraisal practices used through the life cycle currently concentrates only on assessing the project's financial and technical feasibility [106, 297]. The main decision-making techniques used are:

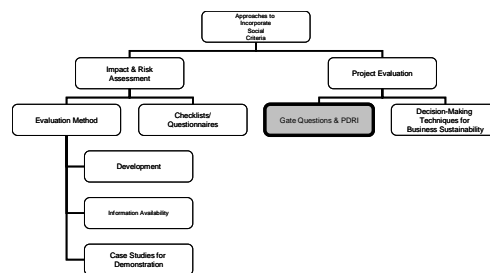
- cash flow estimates;
- rate of return or “earning power” estimates; and
- risk and sensitivity analysis [131].

To incorporate social business sustainability on the evaluation level within the project management methodology, the following two aspects should be addressed:

- gate readiness reviews; and
- decision-making techniques used at the gate reviews.

6.3.1 Gate Readiness Reviews

A gate readiness review aims to determine whether the project can progress to the next phase. It acts as an internal review to ensure that projects enter the gates at the right time. Gate readiness reviews are guided by the gate questions in the project management methodology, which provides insight into the aspects that the decision-makers, i.e. sponsor and stakeholders, would be looking at/for during the gate review.



In 1994, the Construction Industry Institute developed the PDRI, an effective, simple and easy-to-use scope definition tool that quantifies pre-project planning efforts, specifically scope definition, and correlate it to the predictability of achieving project objectives [268]. The index was developed specifically for industrial projects and was based on industry best practice. It can be used at any time before a project enters the execution phase [298], thus during front-end loading, i.e. Phases 1 to 4. The index works on a handicap principle, i.e. the lower the score, the more complete the scope definition. Many companies have adapted the PDRI and use it as a guideline during a gate readiness review. For example, the PDRI must equal 500 or less before the project can enter gate 2.

To incorporate social sustainability aspects in gate readiness reviews, the following two aspects are studied:

- gate questions; and
- PDRI.

6.3.1.1 Gate Questions

Gate questions provide decision-makers with guidelines of what deliverables the project should have completed at the end of a specific phase. Deliverables can be information required by decision-makers to decide whether to continue with the project. The questions found in literature could be divided into three categories:

- project management - administrative details, resource allocation, etc.;
- technical management - technical feasibility, operational capabilities, permits, etc; or
- business management - fit of project to business strategy, business plan, business risks, etc. [103].

These gate questions are shown in Appendix R. These questions assess activities and deliverables that have been listed in the project management methodology. The proposed activities and deliverables of Figure 6-4 and Figure 6-5 have been used as a basis to develop a set of proposed gate questions to be added to the current project management methodologies to address social business sustainability. These questions are shown in Figure 6-7.

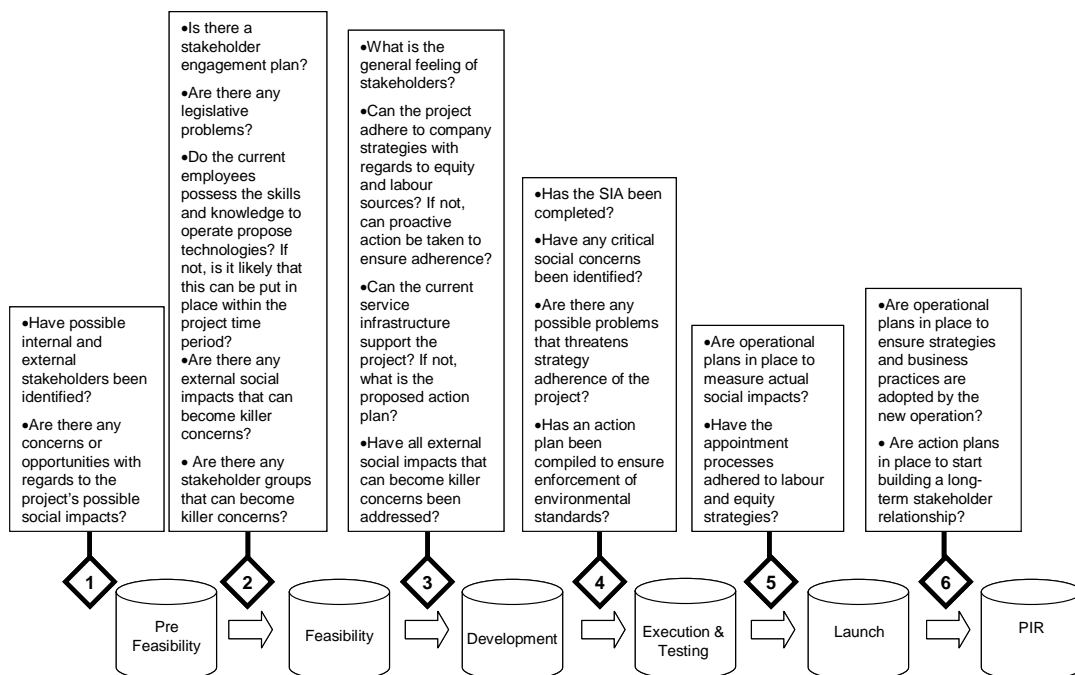


Figure 6-7: Proposed Gate Questions to Address Social Business Sustainability

6.3.1.2 Project Definition Rating Index

The PDRI for industrial projects does not only analyse scope definition, but can also predict factors able to impact on project risk [299]. The PDRI consists of 70 elements, which are divided into three main sections and 15 categories (see Table 6-17). There is currently one element (B8) specifically dedicated to social issues. However, some of the other elements relate to the proposed social sustainability framework, for example I2, O6, N3 and L3.

Many companies adopted the PDRI, e.g. a per track score [300]. The US Department of Energy developed a PDRI for environmental management projects by using the CII (waarvoor staan dit?) PDRI for building projects as a basis [301].

It is thus proposed that the PDRI should be used to address social business sustainability in project management methodology. This can be done by either one of two routes. The first is to use the existing PDRI elements and to group those addressing social aspects together to form a social rating. The other route is to develop a separate PDRI focussing solely on social aspects in a project scope definition.

However, separate research is required for both of these routes, which might even be company specific. Nevertheless, research into the feasibility or practicality of these proposed approaches cannot be executed before projects start to address social sustainability. These projects could then be used for baseline information. Incorporating social business sustainability through questionnaires and/or checklists is a prerequisite to explore the PDRI options.

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

Table 6-17: PDRI Sections, Categories and Elements [299]

Section 1: Basis of Project Decision	Section 2: Front End Definition	Section 3: Execution Approach
Category A: Manufacturing Objectives	Category F: Site Information	Category L: Procurement Strategy
A1: Reliability Philosophy	F1: Site Location	L1: Identify Long Lead/ Critical Equipment &and
A2: Maintenance Philosophy	F2: Survey and Soil Tests	Materials
A3: Operating Philosophy	F3: Environmental Assessment	L2: Procurement Procedures and Plans
Category B: Business Objectives	F4: Permit Requirements	L3: Procurement Responsibility Matrix
B1: Products	F5: Utility Sources with Supply Conditions	Category M: Deliverables
B2: Market Strategy	F6: Fire Protection and Safety Considerations	M1: CADD/Model Requirements
B3: Project Strategy	Category G: Process/Mechanical	M2: Deliverables Defined
B4: Affordability/Feasibility	G1: Process Flow Sheets	M3: Distribution Matrix
B5: Capacities	G2: Heat nd Material Balances	Category N: Project Control
B6: Future Expansion Considerations	G3: Piping and Instrumentation Diagrams	N1: Project Control Requirements
B7: Expected Project Life Cycle	G4: Process Safety Management	N2: Project Accounting Requirements
B8: Social Issues	G5: Utility Flow Diagrams	N3: Risk Analysis
Category C: Basic Data Research and Development	G6: Specifications	Category P: Project Execution Plan
C1: Technology	G7: Piping System Requirements	P1: Owner Approval Requirements
C2: Processes	G8: Plot Plan	P2: Engineering/ Construction Plan and Approach
Category D: Project Scope	G9: Mechanical Equipment List	P3: Shut Down/ Turn-Around Requirements
D1: Project Objectives Statement	G10: Line List	P4: Pre-Commissioning Turnover Sequence
D2: Project Design Criteria	G11: Tie-in List	Requirements
D3: Site Characteristics Available vs Required	G12: Piping Speciality Items List	P5: Start-up Requirements
D4: Dismantling and Demolition Requirements	G13: Instrument Index	P6: Training Requirements

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 6

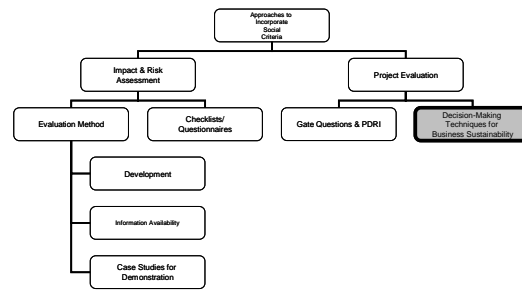
Table 6-17: PDRI Sections, Categories and Elements [299] (continues)

Category D: Project Scope (Continues)	Category H: Equipment Scope	
D5: Lead/Discipline Scope of Work	H1: Equipment Status	
D6: Project Schedule	H2: Equipment Location Drawings	
Category E: Value Engineering	H3: Equipment Utility Requirements	
E1: Process Simplification	Category I: Civil, Structural and Architectural	
E2: Design and Material Alternatives Considered/Rejected	I1: Civil/Structural Requirements	
E3: Design for Constructability Analysis	I2: Architectural Requirements	
	Category J: Infrastructure	
	J1: Water Treatment Requirements	
	J2: Loading/Unloading/Storage Facilities Requirements	
	J3: Transportation Requirements	
	Category K: Instrument and Electrical	
	K1: Control Philosophy	
	K2: Logic Diagrams	
	K3: Electrical Area Classifications	
	K4: Substation Requirements/Power Sources Identified	
	K5: Electrical Single Line Diagrams	
	K6: Instrument and Electrical Specifications	

6.3.2 Decision-Making Techniques for Business Sustainability

Social business sustainability can only be incorporated in decision-making if the long-term social consequences of any course of action are considered in the decision-making process. The idea that the above is the true

meaning of social responsibility is not a new [302], yet internal appraisals in industry typically focus on financial and technical aspects only [106]. The decision environments faced by project managers are complex with numerous problems and interrelationships, yet few project managers have had training in decision analysis [303]. Another complexity is that sustainable development emphasises evaluation above valuation, thus traditional decision-making techniques based on reducing all information into economic terms cannot be applied, since all social and environmental consequences are not reducible to economic metrics [150]. The real complexity of choice can only be placed before decision-makers if evaluation methods are used [150]. The best decision-making techniques for sustainable project life cycle management are thus evaluation methods instead of valuation methods.



Over the last decade, sustainable development evaluation methods have been researched extensively. The following section describes two evaluation methods deemed best to be used in project life cycle management decision-making, namely:

- Multi Criteria Decision Analysis (MCDA); and
- Balanced Scorecards.

6.3.2.1 Multi Criteria Decision Analysis

MCDA is regarded as the best decision-making technique to use if negative and positive impacts or consequences cannot be expressed in monetary terms [304]. MCDA is a quantitative approach to evaluate decision problems involving multiple and sometimes conflicting variables or criteria. The approach aims to highlight the conflicts and reach compromise by following a transparent process [305]. The technique's transparency, together with the flexibility thereof, is regarded as the main advantages of MCDA [306]. MCDA techniques include Analytic Hierarchy Process (AHP), goal programming, pre-emptive optimisation, weighted sums, fuzzy set theory, ELECTRE (Outranking) and data envelopment analysis [305, 307]. The AHP has been applied to both project management [303] as well as sustainable development initiatives [308, 309] and is therefore explored further.

6.3.2.1.1 Analytic Hierarchy Process (AHP)

Thomas Saaty developed the AHP [303]. The technique's uniqueness lies in the objective hierarchy used for decision-making purposes and the way it converts pair-wise comparisons into weights or scores by using matrix algebra and solving eigenvector problems. The process thus enables decision-makers to construct their decision objectives or criteria into a hierarchy. Weights or relative importance are subsequently assigned to each level of the hierarchy by comparing only two objectives at a time, using the nine point scale developed specifically for the process (see Table 6-18). Saaty also developed a method to test the consistency of these pair-wise comparisons. After establishing weights for all decision criteria, the various alternatives can be compared using the same pair-wise method. A final score for each alternative is calculated by a weighted sum method [307].

Table 6-18: AHP Nine-Point Evaluation Scale [307]

Numerical Value	Verbal Terms
1	Equally important
3	Moderately more important
5	Strongly more important
7	Very strongly/demonstrably more important
9	Extremely/absolutely more important
2,4,6,8	Intermediate values

Saaty [310] summarised the process in the following seven steps:

1. define the problem and determine the goal;
2. construct the hierarchy from the top through the intermediate levels to the lowest level. The lowest level is normally alternatives;
3. construct a set of pair-wise comparison matrices (size $n \times n$) referred to as A ;
4. there are $n(n-1)$ judgments required to develop the set of matrices in step 3;
5. hierarchical synthesis is now used to solve the eigenvector problem to get the priority vector (weight/score). The principal eigenvalue is denoted by the symbol λ_{\max} . The following equation shows its relation to the pair-wise comparison.

$$A \bullet \omega = \lambda_{\max} \omega \sum_{i=1}^n \omega_i = 1 \quad \mathbf{6-3}$$

6. consistency is determined by using the eigenvalue, λ_{\max} , to calculate the consistency index, CI as follows:

$$CI = \frac{\lambda_{\max} - n}{n} \quad \text{where } n \text{ is the matrix size.}$$

The consistency is right if the consistency ratio $CR < 10\%$. The consistency ratio is calculated as follows:

$$CR = \frac{CI}{RI} \quad \text{where } RI \text{ is the random index value based on the matrix size.}$$

7. steps 3 to 6 are performed for all levels.

Direct weighting has been proposed as an alternative to the pair-wise comparison method of the original AHP method. The idea is that AHP logic is followed, but instead of doing pair-wise comparison, decision-makers assign direct weights to criteria or alternatives together with their level of uncertainty when assigning these weights. The advantages of this approach are:

- the straight forwardness of the approach;
- no computer or software package is needed; and
- trade-off between attributes becomes more visible [308].

6.3.2.1.2 AHP Demonstration

The information of the acrylic fibre plant used for a case study in section 4.3.2 and section 0 is used for demonstration purposes. The hypothetical case study considers that the plant will be built in future. The decision hierarchy based on the proposed social sustainability framework is shown in Figure 6-8.

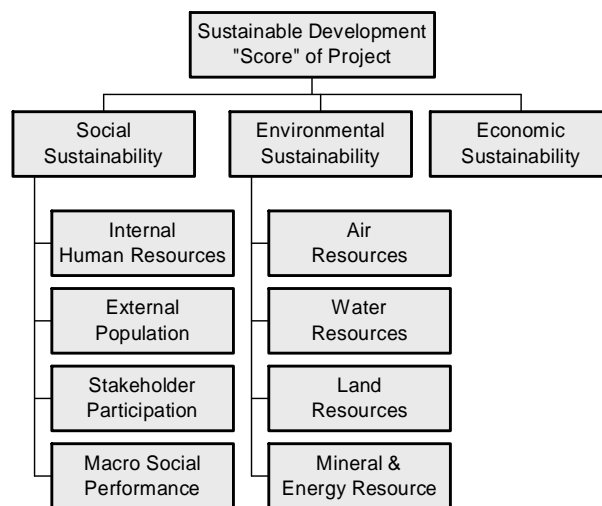


Figure 6-8: Decision Criteria Hierarchy

Weight for the Criteria

Weights for the environmental sub-criteria have been obtained from a previous study conducted in South Africa [271]. These are:

- | | |
|--------------------------------|------|
| • air resources | 0.12 |
| • water resources | 0.47 |
| • land resources | 0.20 |
| • mineral and energy resources | 0.21 |

Weights for the three main sustainable development criteria and the social sub-criteria have been acquired from the analysis of a questionnaire. Hundred and five professionals attending post graduate courses on life cycle engineering and management completed the questionnaire (attached in Appendix

S). The direct weighting approach was used for social sub-criteria and the pair-wise comparison method for the main criteria. The following weights have been obtained:

- Environmental 0.33
 - Economic 0.40
 - Social 0.27
 - 0 Internal Human Resources 0.37
 - 0 External Population 0.23
 - 0 Macro Social Performance 0.18
 - 0 Stakeholder Participation 0.22
- } 1
} 1

Project Scores for the Criteria

The values for the SIIs in Table 6-16 are used as scores for the social sub-criteria. The environmental scores is calculated based on the RII method referred to in section 6.2.1.1. Standard RII values have been calculated for selected process parameters [311]. These RII values have been used together with the available information (see Appendix P) to calculate RIIs for the four environmental categories. These calculations are shown in Table 6-19.

Table 6-19: Calculation of Resource Impact Indicators

Process Parameter (Annual Quantities)		Water	Air	Land	Mined
Waste	1 545 000 kg	7.29×10^{-02}	2.33×10^{-06}	4.22×10^{-02}	0
Electricity used	174182400 MJ	7.88×10^5	1.79×10^4	1.68×10^2	8.81×10^1
Coal used	46368000 kg	0	0	0	1.67×10^2
Steam used	354960000 kg	2.60×10^4	2.51×10^2	4.41	1.52×10^2
Water used	1429200000 kg	7.00×10^4	0	0	0
Resource Impact Indicator		$8.84 \times 10^{+05}$	$1.81 \times 10^{+04}$	$1.72 \times 10^{+02}$	$4.07 \times 10^{+02}$

Scores for the economic criteria is calculated based on only one midpoint category, namely annual turnover. The same approach used for the environmental and social dimensions is followed. The following values are assumed:

- Project Annual Turnover R500 million
- Current Annual Turnover of entire company R13 545 million
- Target Annual Turnover (20% increase assumed) R16,254 million

The Economic Impact Indicator (EII) is thus 2.56×10^{-02}

The values and weighted sum method is shown in Table 6-20 to convert all scores into a final project sustainability score.

Table 6-20: Example of Analytic Hierarchy Process

Criteria	Weight	RII/SII/EII	Calculated Score
Economic	0.4		2.56 x 10⁻⁰²
Environmental	0.33		-4.18 x 10⁺⁰⁵
• Air resources	0.12	-1.81 x 10 ⁺⁰⁴	
• Water resources	0.47	-8.84 x 10 ⁺⁰⁵	
• Land resources	0.20	-1.73 x 10 ⁺⁰²	
• Mineral and energy resources	0.21	-4.07 x 10 ⁺⁰²	
Social	0.27		-1.18 x 10⁻⁰²
• Internal Human Resources	0.37	1.09 x 10 ⁻⁰⁴	
• External Population	0.23	-5.47 x 10 ⁻⁰²	
• Macro Social Performance	0.18	3.99 x 10 ⁻⁰³	
• Stakeholder Participation	0.22	0	
Sustainability Score of Project			-1.38 x 10⁺⁰⁵

The AHP method can be applied to choose between projects, thus choosing the project with the best overall positive impact. In line with the PDRI model threshold, values for projects at specific gates can be developed.

6.3.2.2 Balanced Scorecard (BSC)

6.3.2.2.1 History of the BSC

Kaplan and Norton first proposed the concept of the BSC in 1992 as “*a set of measures that gives top managers a fast but comprehensive view of the business*” [312]. The concept is based on viewing the business from four perspectives by answering four basic questions linked to each perspective. The questions are:

- how do customers see us? (customer perspective);
- what must we excel at? (internal perspective);
- can we continue to improve and create value? (innovation and learning perspective); and
- how do we look to shareholders? (financial perspective).

The scorecard is centred on the company’s vision and strategy and provides goals and measures for each perspective, using non-financial indicators as measures in supplying financial measures [313].

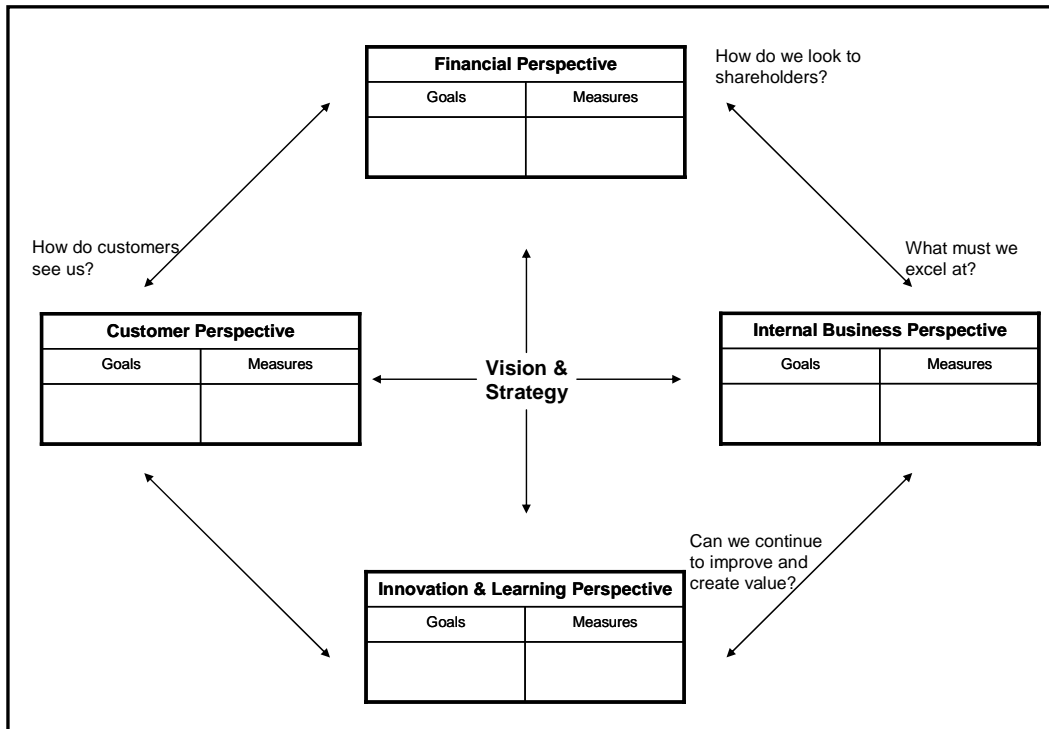


Figure 6-9: The BSC [312, 313].

6.3.2.2 Sustainability BCS

In the last ten years, numerous proposals have been made to add the environmental and social dimensions to the BSC to enable measurement of business sustainability. Some of these proposals are summarised in Table 6-21. However, using sustainable BSCs are not that common.

Table 6-21: Approaches to Adopt BSC to Include Social and Environmental Dimensions of Sustainable Development

Author	Idea to Adapt BSC	Reference
Kaplan & Norton	Instead of adding a fifth perspective dealing with stakeholders other than customers and shareholders, stakeholder objectives should be included only when they are vital to the success of the shared service unit's strategy.	[314]
Kaplan & Norton	Social and environmental indicators emerged in the internal process perspective.	[315]
Johnson	Add employees to the learning and growth perspective and external stakeholders to the customer perspective.	[316]
Epstein & Wisner	Add a fifth dimension dealing explicitly with environmental and social aspects or inserting environmental and social indicators in each dimension.	[316]
Figge, et al.	Proposes an approach based on whether companies internalise environmental and social consequences. If internalised, the best approach proposed would be to integrate environmental and social indicators in each perspective. If not internalised, an additional fifth dimension is proposed. The approaches proposed are predominantly economic-oriented. A third approach is to derive an environmental and social scorecard, which is integrated into the existing BSC, following one of the two first proposals.	[317]
Bieker, et al.	Four proposals for a sustainability balanced scorecard are discussed, namely services, partial, transversal and additive.	[318]

6.3.2.2.3 Sustainability BSC in Projects

A BSC approach based on a stoplight mechanism had been proposed for project management [319] (see Figure 6-10). The stoplight mechanisms visually express the project's status by using one of three colours, each with a specific meaning. These are:

- green - project performance agrees with project plans and stakeholder expectations;
- yellow - deficiencies in project performance have been noted, are being monitored and corrective action will be implemented in the near future; and
- red - serious deficiencies have been noted and the project is in a crisis.

The scorecard promotes better management of the project since it presents the true impact of a project and can be used throughout the project life cycle for health checks [319]. However, as with the original BSC, the proposed scorecard does not address the environmental and social dimensions. Proposals have been made to add a fifth dimension to the scorecard to address environmental aspects [103].

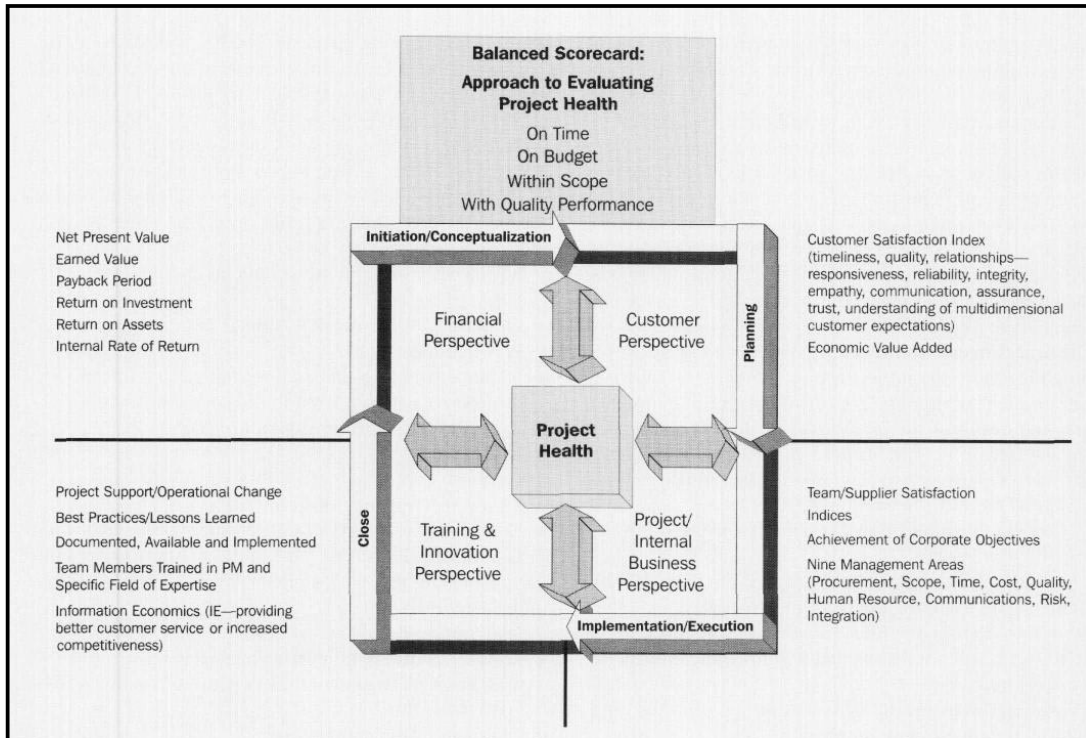


Figure 6-10: Balanced Scorecard for Projects [319]

It is proposed that companies using a BSC for projects follow the most suitable approach from their viewpoint proposed for the original BSC to adopt their project scorecard to address social and environmental sustainability. The checklists, questionnaires and indicators discussed can serve as a baseline of what to address or measure from a social perspective.

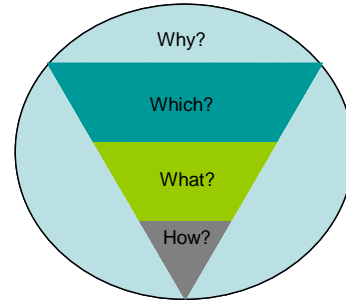
6.4 Conclusions

The chapter concludes that social business sustainability should be incorporated into project management methodologies by using a phased approach. The first phase should entail applying the proposed questionnaires and checklists (section 6.2.2) in the various life cycle phases and including the proposed gate questions in the model. The results of this phase can be used to refine the units of equivalence of the proposed midpoint categories (section 6.2.1.1.3) as well as for an input or testing material for the PDRI (section 6.3.1.2). The second phase should incorporate more social aspects in the gate readiness, thus the application of a social PDRI or the adaptation of the existing PDRI. The final phase should modify the existing decision-making methods to ensure alignment with sustainable development. This might include applying new techniques, such as MCDA, to the decision-making process or relying more on the use of project BCS. The proposed evaluation method can be applied in the feasibility or development life cycle phases, either during the second or third phase of the incorporation of social sustainability aspects. The time would depend on the availability of information, internally and externally and familiarity with the LCIA approach.

7. Conclusions

“Corporate Sustainability today includes recognition of the leadership role that the private sector must take in ensuring social progress, improved equity, higher living standards, and stewardship of the environment”

- J.D. Wolfensohn, World Bank President [320]



This chapter summarises all of the conclusions reached during the research project and presents additional research areas that have been identified. The chapter is structured around the three main research questions, namely:

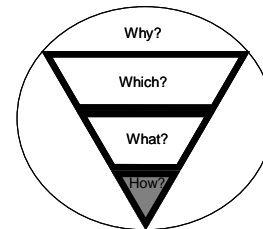
- Which life cycle should be considered when evaluating the project’s possible impacts?
- What social business sustainability impacts or aspects should be considered in the project life cycle? and
- How should project management methodologies be adopted to ensure incorporation of social business sustainability?

In addition, a fourth question is added for discussion purposes, namely why should business address or consider addressing the social aspects of sustainable development?

7.1 How: Methods to Adopt Project Management Methodologies

The research proposed a phased implementation of social business sustainability in project management methodologies using checklists and questionnaires, gate questions, a social impact indicator evaluation method and new decision-making methods. The phased approach was identified as the best option for the following two reasons:

- firstly, information was either unavailable or not collected yet, rendering it impossible to apply the evaluation method consistently; and
- secondly, as the idea of social business sustainability is new to businesses, a gradual paradigm shift is required.



An analysis of the key events regarding the environmental and social dimensions of sustainable development is summarised in Table 7-1. This supports these initial conclusions. The analysis indicates that although certain social aspects, i.e. human rights, enjoyed international recognition early in the 20th century, the social dimension was only briefly mentioned in the Founex Report in 1971.

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 7

Table 7-1: Timeline of Key Events Impacting on Social and Environmental Dimension of Sustainable Development [adapted from 321 and 322]

When	What	Environmental	Social
1948	Universal Declaration of Human Rights		The UN General Assembly adopts the significant document which enshrines human rights across the political, social and economic spectrums
1962	Silent Spring by Rachel Carson	First recognition of environmental dangers in modern technologies	
1968	UNESCO's Intergovernmental Conference for Rational Use and Conservation of Biosphere	Early discussions of the concept of ecologically sustainable development	
1969	National Environmental Policy Act passed in USA	Council of Environmental Quality is created	
1971	Greenpeace started in Canada	NGO focussing on the environment	
	OECD implements Polluter Pays Principle	Those causing pollution should pay the cost	
	Founex Report on Development and Environment is prepared	Report calls for the integration of environment and development strategies	Report recognises that high rates of economic growth do not by themselves guarantee that urgent social and human problems with ease
	International Institute for Environment and Development (IIED) established	The IIED's mandate is to seek ways of making economic progress without destroying the environmental resource base	
1972	UN Conference on Human Environment	The conference resulted in the establishment of many national environmental protection agencies as well as the United Nations Environmental Programme (UNEP)	

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 7

Table 7-1: Timeline of Key Events Impacting on Social and Environmental Dimension of Sustainable Development [adapted from 321 and 322] (continues)

When	What	Environmental	Social
1976	OECD Guidelines for Multinational Companies		Recommends policies on transparent and accountable business conduct
1977	Sullivan Principles launched		Eight principles to encourage companies to promote social and political justice
1978	OECD initiatives	Relaunches research on environmental and economic linkages	
1980	IUCN releases the World Conservation Strategy	Focuses on habitat destruction	Acknowledges the problems of poverty, population pressure and social inequity
1984	OECD Conference on Environment and Economics	Conference concludes that environment and economics should be mutually reinforced	
1985	Responsible Care® launched	Initial focus on environmental friendly practices as well as Health and Safety	Scope broadened to include sustainable development of society and stakeholder relationships.
1987	Brundtland Report released	Popularise the term sustainable development, which acknowledges economic, social, environmental and cultural issues. Inter and intra-generational equity is acknowledged	
1987	Montreal Protocol adopted	Focus on ozone depletion substances	
1989	CERES, Coalition for Environmentally Responsible Economies is launched	CERES is best known for its ten principles covering waste disposal and reduction, energy conservation and safety	
1990	UN Summit for Children	Recognition of the environmental impacts on future generation	

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 7

Table 7-1: Timeline of Key Events Impacting on Social and Environmental Dimension of Sustainable Development [adapted from 321 and 322] (continues)

When	What	Environmental	Social
1992	Earth Summit in Rio de Janeiro	Agenda 21, Convention on Biological Diversity and the Framework Convention on Climate Change. Agenda 21 contains a whole section on conservation and managing resources as well as a chapter on integrating environmental aspects in decision-making	Agenda 21 contains a section on the social and economic dimensions, but the conference was mainly orientated towards environmental sustainability
	Basel Convention is implemented	The convention reduces the movement of hazardous waste	
	UK's Cadbury Commission and SA's King Committee launched		Both address corporate governance and corporate behaviour
1993	World Conference on Human Rights		Governments re-affirmed their international commitments to all human rights
1994	Caux Round Table Principles for Business launched	Includes principles addressing environmental aspects	The principles focus strongly on social aspects
1995	World Summit for Social Development		The first time that the international community expressed a clear commitment to eradicate absolute poverty
1996	ISO 14001 formally adopted	Voluntary international standard for corporate environmental management systems	
1996	SA 8000 released		The first auditable international standard for companies to guarantee workers' basic rights

Sustainable project life cycle management: Development of social criteria for decision-making

Chapter 7

Table 7-1: Timeline of Key Events Impacting on Social and Environmental Dimension of Sustainable Development [adapted from 321 and 322] (continues)

When	What	Environmental	Social
	Global Reporting Initiative is convened	The first common international framework for triple bottom line reporting by companies. The concept was coined in the same year by John Elkington	
1997	Kyoto Protocol signed	Goals are set for greenhouse gas emission reduction	
1999	Dow Jones Sustainability Index launched	The index address all three dimensions of sustainable development	
	AccountAbility launches AA1000 framework		The first systematic stakeholder based approach for organisational accountability
	SIGMA Project launched	A project that comprises a set of principles and a framework to mainstream sustainability in core business	
2000	OECD Guidelines revised	The new guidelines address nine areas, including environmental and social aspects	
	UN Global Compact launched	Three of the nine principles address environmental issues	Six of the nine principles address social issues
	UN's Millennium Summit		World leaders agree that the UN's first priority was eradicating extreme poverty
2002	World Summit on Sustainable Development	Global change since Rio (1992) is assessed	More focus on social sustainable development issues
	Equator Principles launched	Voluntary set of guidelines for managing social and environmental considerations when financing development projects	
2003	JSE launches its Social Responsible Investment Index (SRI)	The JSE SRI addresses both the environmental and social dimensions of sustainable development	

A brief surge of interest followed the Founex Report in the 1970s. Interest was, however, mainly directed towards corporate social performance, linkages with environmental responsible behaviour and the corporate social responsibility theory [35, 158].

After the Brundtland report in 1987, interest in the social dimension flared up again. Once more, interest was mainly directed towards corporate social responsibility programmes and corporate social investment [4, 170, 187, 302]. The Rio de Janeiro Summit's Agenda 21 dedicated a whole section to the social dimension of sustainable development. Interest in social sustainability subsequently increased drastically, resulting in a World Summit on Social Development in 1995 and various social standards, guidelines and initiatives. Social sustainability therefore only started receiving due attention during the mid 1990s. The idea that sustainable development equated environmental aspects paved the way for the concept's true and broader definition [42].

The analysis of the key events regarding the environmental and social dimensions of sustainable development therefore supports the argument that the development of social indicators parallels environmental indicators' development 20 years ago [158].

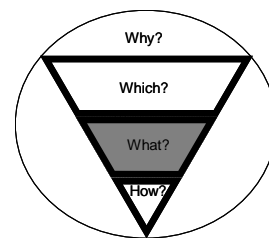
It will consequently take time before social information databases are as readily available as environmental databases. Applying the indicator evaluation method will therefore have to be postponed. Companies can, however, implement the checklists and questionnaires proposed in the research with immediate effect. A company in the South African process industry is currently implementing an adjusted version of the questionnaire.

Future research in testing the indicator evaluation methods and finalising mid-point categories can be undertaken once social information and data are more readily available internally and externally.

7.2 What: Proposed Social Sustainability

Framework

The research developed and introduced a social sustainability assessment framework as part of a sustainability assessment framework for operational initiatives. The proposed social sustainability assessment framework was verified and validated. The social sustainability questionnaires, indicators and checklists have been structured around the framework. Although it can be concluded that the criteria and sub-criteria are relevant and applicable to the asset life cycle and project life cycle, the visual appearance of the model seems to be impaired. Three of the four main social criteria address impacts on various stakeholder groupings, i.e. Internal Human Resources (employees), External Population (communities in close proximity) and Macro Social Performance or the region and nation, while the fourth criterion addresses relationships with these stakeholders. The fourth criterion thus appears to be underpinning the other three criteria. Considering the broader



framework (see Figure 3-1), it is argued that stakeholder relationships are also essentials in undertaking societal initiatives (Level 2 of the framework). In addition, according to the stakeholder theory, shareholders or investors as well as the natural environment are viewed as the company's stakeholders (see Figure 3-4 and Figure 3-5). Stakeholder relationships therefore appear to be at the centre of any company's business sustainability. It is concluded that the framework's visual appearance should be changed. Four new framework layouts are presented. Future research can focus on developing a visual appearance for the framework, which indicates relationships between the three dimensions, spatial scales of impacts and relative importance of criteria to business.

7.2.1 Sustainability Framework as a Target

Since the external population, internal HR and macro socio-environmental performance criteria all interact with the framework's environmental dimension as well as with the economic dimension, it is proposed that the framework be modified in terms of a sustainability target (Figure 7-1).

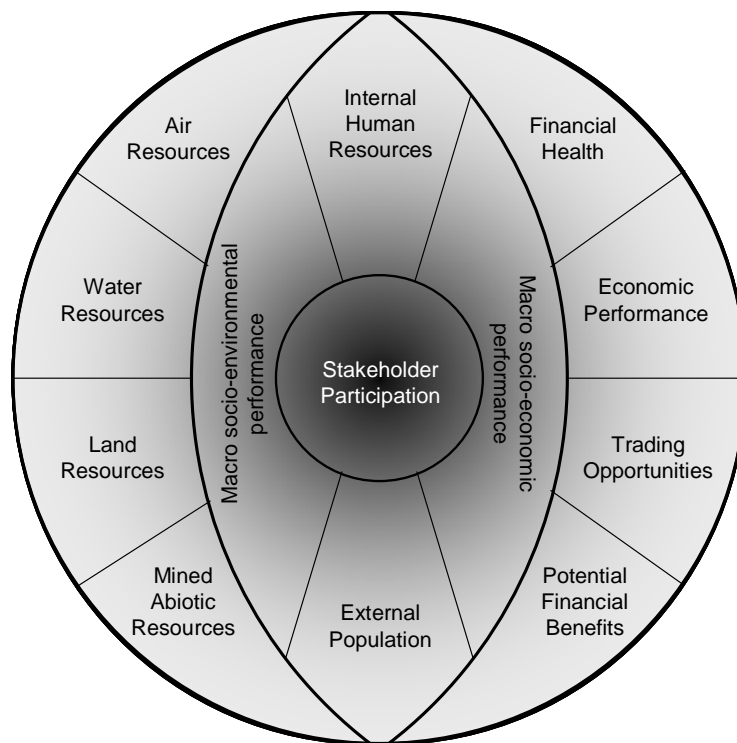


Figure 7-1: Sustainability Target Framework

7.2.2 Sustainability Wall

An analogy of comparing a sustainable business to a brick wall has been used. The various criteria in Figure 3-1 and Figure 3-6 would serve as building blocks (Figure 7-2). The cornerstone is the corporate responsibility strategy, strengthened by stakeholder participation. The first building block

on operational initiatives will be economic sustainability, since it is a prerequisite for any other form of sustainability (see section 3.3.1).

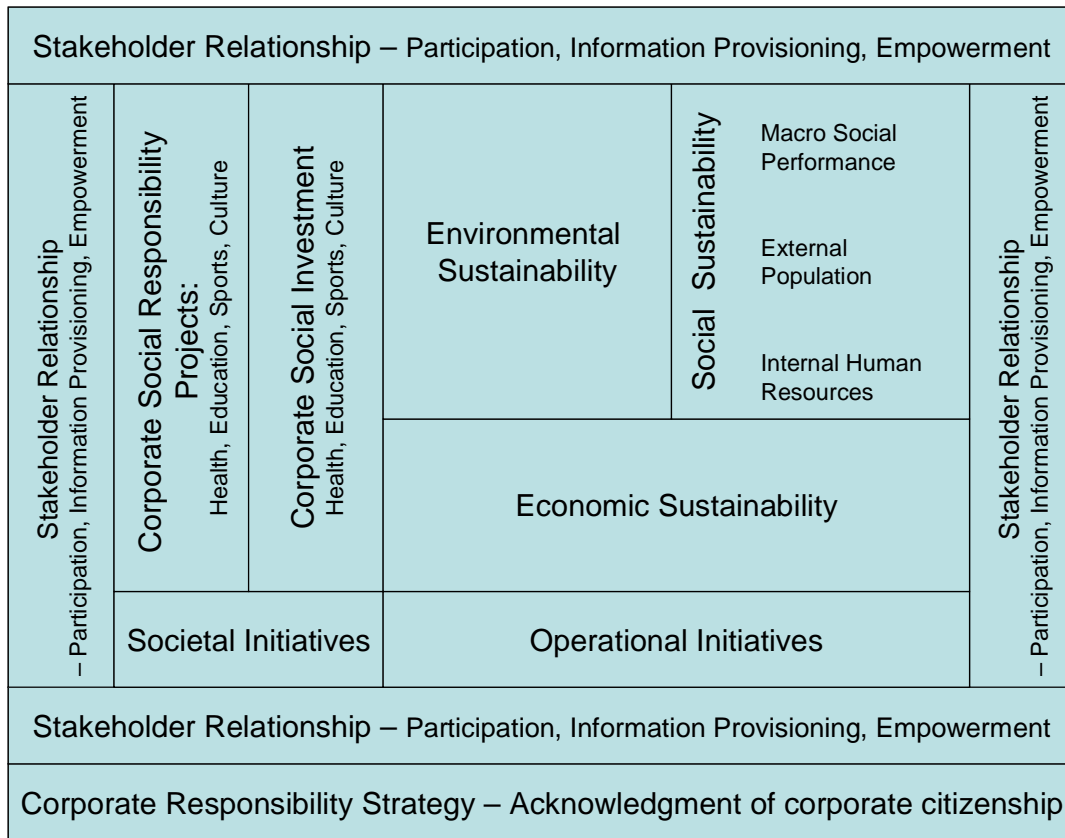


Figure 7-2: Sustainability Wall

7.2.3 Russian Doll

The third proposed view of the sustainability framework concluded that stakeholder participation is the centre, with Levett’s “Russian Doll approach” [323] to sustainability as a starting point. Levett’s model view sustainability as ensuring that human society lives within the environment’s limits and that the economy meets society’s needs. It thus consists of the following three concentric circles:

- economy in the middle,
- society in the second circle, encircling the first circle; and
- environment in last circle, encircling everything.

Figure 7-3 shows the proposed “Russian Doll” framework.

7.2.4 Hierarchical Model

Although these models are better graphical representations of where the criteria fit in, a hierarchical model will be easier to follow for indicators evaluations, etc. A small change to the proposed social sustainability framework is thus shown in Figure 7-4 as a fourth option.

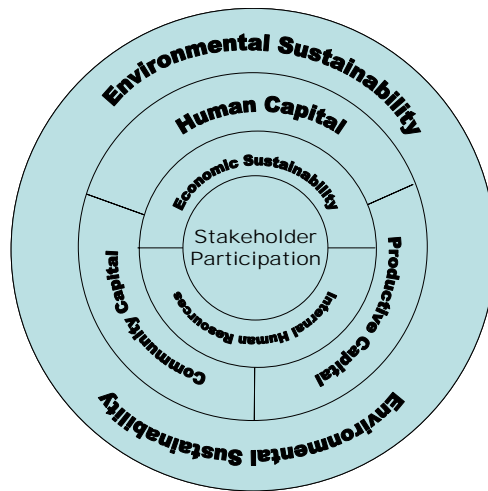


Figure 7-3: Proposed “Russian Doll” Framework

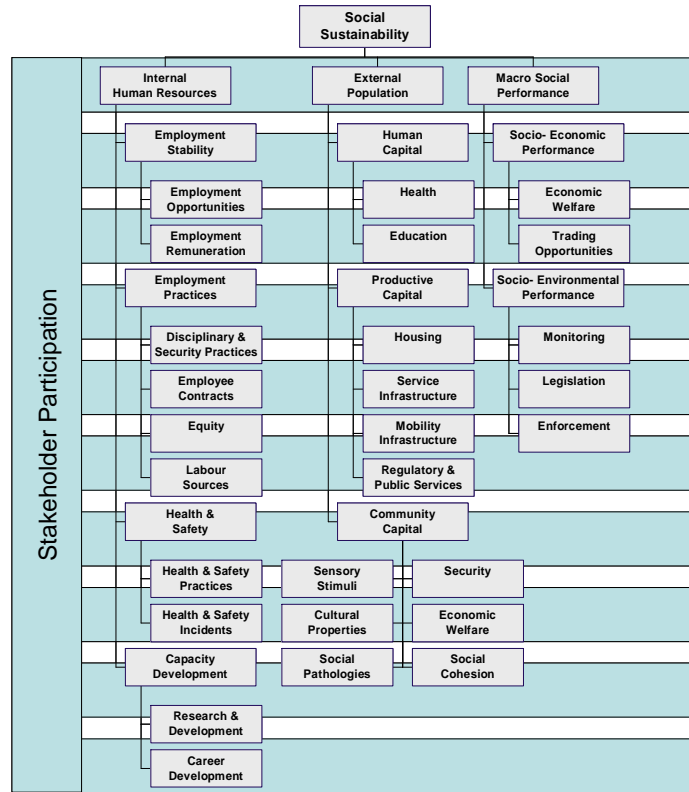
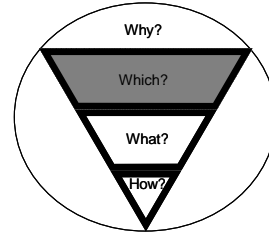


Figure 7-4: Changes to Proposed Social Sustainability Assessment Framework

7.3 Which: Life Cycles to Consider

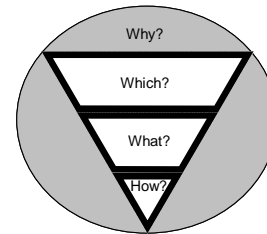
The research concluded that it is the project's deliverable as well as the deliverable's deliverables, i.e. in the case of the process industry, the asset and its products, that have economic, environmental and social consequences to consider in the project life cycle. This life cycle engineering perspective forces design engineers as well project team members to consider the asset's decommissioning phase as well as the product's phase-out phase, as these do not currently receive due attention.



The system's engineering perspective and life cycle thinking is not a new idea the origins thereof lies in the development of weapon systems during the Second World War [324]. However, the principles have not been applied to environmental and social project life cycle management. The life cycle interactions are thus viewed as a contribution to the field of sustainable project life cycle management.

7.4 Why: Importance of Social Sustainability to Business

“If business concentrates on social goals at the sacrifice of short-term profit, it may find itself destroyed at its neglect of its long-term future. On the other hand, if it emphasises profit to the exclusion of social goals, it may find itself abandoned and destroyed by the people it has ignored” - Henry Ford (as cited in [1])



The research showed that various driving forces pressurise businesses to align their activities with the principles of sustainable development and to address all three dimensions thereof in their internal business practices (see section 1.1.1 and Appendix A). Numerous authors and organisations emphasised business leaders' moral obligation to address the environmental and social consequences of their activities [304]. Currently, i.e. during 2004 and 2005, questions are raised about where companies' true responsibility lies. The collapse of Parmalat in Italy at the end of 2003 raised the question of whether the company would have collapsed, had it concentrated on its primary activities, i.e. manufacturing and selling dairy products, instead of investing millions of corporate funds in running a football club, i.e. a possible Corporate Social Responsibility (CSR) project [325]. The collapse also illustrated that companies might be serving too many masters and that good governance, i.e. answerability to shareholders, is not necessarily the same as corporate social responsibility, i.e. answerability to society [325].

Lord Browne, the chief executive of BP, announced in February 2005 that their company is engaged in a “noble” cause of making money, and, in addition, that the company did not so much have stakeholders or corporate social responsibility, but is instead establishing positions of mutual advantage

with the people it comes into contact with and that this mutual advantage requires business to be in business to make profits [326]. In March 2005, the chief executive of Nestlé, a company regarded as a good corporate citizen in many respects [327], stated that a company should not feel obliged to give anything back to the community, since it has not taken anything from it and that the company's obligation to the community is simply to create employment opportunities and to produce products [328]. Paul Gilding, a former executive director of Greenpeace International, believes that environmental and social sustainability will be well served by the death of corporate social responsibility, as it needs to be replaced by a market-focused approach [329]. These business leaders' comments indicate that business is starting to question whether it is their responsibility to address social sustainability aspects and whether their true responsibility does not rather lie in making profits. However, companies are still being expected to take on responsibilities formerly belonging to governments. Companies are, however, not governments and do not share the same kind of relationship with society as governments [325].

The question now arises: in spite of all these driving forces analysed, should companies be concerned with social sustainability aspects?

Society needs the corporate sector to engage in the sustainability arena. This will, however, not happen because of an optional executive commitment to an abstract concept. The corporate sector will engage in sustainability only if it is a good business strategy [329]. However, sustainability is the only business strategy left to pursue. Social issues can not be treated as separate from core business activities and practices, as society is the base of all economic activity. Without communities, there will be no companies. If environmental resources are not managed according to a sustainability strategy, primary industry activities will not take place, thereby breaking the whole chain of industrial activities. Companies should thus think further than pure profit, i.e. society needs capitalism with a soul. The focus should be on free enterprise in partnership with other stakeholders. Sustainable development is about balance, i.e. balancing the economic needs within the environment's limits without negatively impacting on intergenerational equity. This thesis concludes that business should address social sustainability aspects, but not at the expense of losing perspective of its reason for existence, i.e. its economic licence to operate as granted by the shareholders through its profits.

“If it (business) does not make profits, it will not survive; equally if it thinks only about profits, it will not survive either, since it has to think about the long-term, its goods and services, and the people who touch it.” – Lord Browne (as cited in [326])

8. References

- [1] Esterhuysen, W., *Corporate Social Responsibility: not an optional extra*, Management Today Yearbook 2000, pp 10-11.
- [2] Wheeler, D., & Silanpää, M., *The Stakeholder Corporation: A Blueprint for maximizing stakeholder value*, Pitman Publishing, London, 1997.
- [3] Bibb, P., & Bendix, W., *Corporate Social Responsibility in the present South African Socio-Economic and Political Context*, Industrial Relations Journal of South Africa. Vol. 11, No. 1, 1991, pp.43-59.
- [4] Uys, F., *Social Accountability – A Wider Challenge*, IPM Journal, Vol.5, No.10, 1987, pp.9-11.
- [5] Friedman, M., *The social responsibility of business is to increase its profits*. The New York Time Magazine, 13 September 1970, pp. 32-33; 123-125.
- [6] Dyllick, T., & Hockert, K., *Beyond the Business Case for Corporate Sustainability*, Business Strategy and the Environment, Vol. 11, No.2, 2002, pp.130-141.
- [7] Caldwell, L.K., *A Constitutional Law for the Environment: 20 Years with NEPA indicates the need*, Environment, Vol. 31, No.10, 1989, pp. 6-11, 25-28.
- [8] Brundtland, G. (ed), *Our Common Future: The World Commission on Environment and Development*, Oxford University Press, Oxford, 1987.
- [9] Rees, W.E., *A Role for Environmental Assessment in Achieving Sustainable Development*, Environmental Impact Assessment Review, Vol. 8, No.4, 1988, pp. 273-291.
- [10] Lancaster, O., *Success and Sustainability: A guide to sustainable development for owners and managers of small and medium sized businesses*, Midlothian Enterprise Trust, Edinburgh, 1999.
- [11] Azapagic, A., & Perdan, S., *Indicators for Sustainable Development for Industry: A General Framework*, Trans IChemE, Vol. 78, Part B, July 2000, pp. 243-261.
- [12] Watts, P., & Holme, R., *Corporate Social Responsibility: Meeting Changing Expectations*, World Business Council for Sustainable Development Publication, 1999. Available from: <http://www.wbcsd.org/DocRoot/Fc7YqesJY1mU6ilvhnSZ/CSRmeeting.pdf> visited on 9 December 2003.
- [13] Davis, L.A., *The social responsibility of corporations: Commentary*, The Journal of Corporate Citizenship, Winter 2001, pp.23-30.
- [14] Murphy, K., & Coles, D., *Social Accountability – A new approach to Business*, Sustainable Developments International, Edition 1, 1999, pp.17-19.
- [15] Business and Sustainable Development, *Corporate Social Responsibility*, <http://www.bsdglobel.com/issues/sr.asp>, visited on 30 April 2003.
- [16] PR Week, *Research unveils deep mistrust of business*, PR Week, 10 October 2003. Available from <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=2629> visited on 9 December 2003.

- [17] Brown, D., *The Accountable Business: Managing Corporate Responsibility in Action*, Arthur D. Little publication. Available from <http://www.arthurdlittle.com> visited on 2 May 2003.
- [18] Sampson, I., *Introduction to a legal framework to pollution management in South Africa*. South Africa, Water Research Commission, no. TT 149/01:Deloitte & Touche and WRC report, 2001.
- [19] Roodt, A., *Corporate governance as investment imperative – an African perspective*, Management Today, March 2002, pp. 8-10
- [20] Winstanley, T., *Entrenching Environmental Protection in the New Constitution*, The South African Journal of Environmental Law and Policy, Vol. 2, No.1, 1995, pp. 85-97
- [21] European Commission: Employment and Social Affairs, *Promoting a European framework for corporate social responsibility*, European Communities, Luxembourg, 2001.
- [22] Department of Trade and Industry, *Business and Society: Corporate Social Responsibility Report 2002*, Crown, London, May 2002.
- [23] One Hundred Seventh Congress of the United States of America, Second Session, *Sarbanes Oxley Act of 2002*, Washington, 23 January 2002.
- [24] Kolk, A., *Trends in Sustainability Reporting by the Fortune Global 250*, Business Strategy and the Environment, Vol. 12, No. 5, 2003, pp. 279-291
- [25] Grayson, D., & Hodges, A., *Everybody's Business: Managing Risks and opportunities in today's global society*, Dorling Kindersley Limited, London, 2001.
- [26] Africa News, *Madagascar: Government launches Pro-Poor initiative by Business*, Africa News, 5 January 2004. Available from: <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=3532> visited on 9 January 2004.
- [27] Africa News, *Nigeria: USAID, Shell to spend \$20m On Niger Delta Devt*, Africa News, 23 February 2004. Available from: <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4136> visited on 27 February 2004.
- [28] SIGMA Project, *SIGMA Guide to Guidelines and Standards*, <http://www.projectsigma.com/Toolkit/GuidelinesStandards.asp> visited on 2 January 2004.
- [29] Visser, W.A.M-T., *Sustainability Reporting in South Africa*, Corporate Environmental Strategy, Vol. 9, No. 1, 2002, pp. 79-85.
- [30] Fenwick, G., *Social Reach: Guidelines for Effective Community Involvement*, People Dynamics, Vol. 11, No. 5, 1993, pp. 20-22
- [31] Gladwin, T.N., Kennelly, J.J., & Krause, T-S., *Shifting Paradigms for Sustainable Development – Implications for Management Theory and Research*, Academy of Management Review, Vol. 16, No.4, 1995, pp.691-718.
- [32] United Nations. *United Nations Statistics Division*, http://unstats.un.org/unsd/cdb/cdb_help/cdb_quick_start.asp, visited on 10 December 2003.
- [33] Hemphill, T.A., *Legislating Corporate Social Responsibility*, Business Horizons, March-April 1997, pp.53-58.

- [34] Goede, F., *The Future of SH&E in the process industry with the focus on products*. Presentation given at the Department of Engineering and Technology Management, University of Pretoria, Pretoria, 18 August 2003.
- [35] Sethi, S.P., *A Conceptual Framework for Environmental Analysis of Social Issues and Evaluation of Business Response Patterns*. Academy of Management Review, Vol. 4, No. 1, 1979, pp.63-74.
- [36] Cerin, P., Sustainability hijacked by the sociological wall of self-evidence, *Corporate Social Responsibility and Environmental Management*, Vol.10(4), 2002, pp. 175-185.
- [37] Munish, M., *Social responsibility 'adds to profits'*, The Standard, 1 March 2004. Available from: <http://wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4342> visited on 10 March 2004.
- [38] Business for Social Responsibility, *Comparison of Selected Corporate Social Responsibility-Related Standards*, Business for Social Responsibility, San Francisco, 2000.
- [39] United Nations Commission on Sustainable Development, *Indicators of sustainable development: guidelines and methodologies*, United Nations, 2001. Available from <http://www.un.org/esa/sustdev/natlinfo/indicators/indisd/indisd-mg2001.pdf>, visited on 19 November 2003.
- [40] Hass, J.L., Brunvoll, F, & Hoie, H., Overview of Sustainable Development Indicators used by National and International Agencies, OECD Statistics Working Paper 2002/1, Paris, 2002.
- [41] Reed, J., *Johannesburg Stock Exchange: Appealing to socially responsible niche investors*, Financial Times, 6 October 2003.
- [42] Holliday, C.O., Schmidheiny, S., & Watts, P., *Walking the Talk: The Business Case for Sustainable Development*, Greenleaf Publishing, Sheffield, 2002.
- [43] Kell, G., *The global compact: origins, operations, progress and challenges*, The Journal of Corporate Citizenship, Autumn 2003, pp. 35-49.
- [44] Global Compact Office, *How the Global Compact Works*, United Nations Global Compact Office, New York, 2003. Available from: <http://www.unglobalcompact.org> visited on 26 December 2003.
- [45] Global Sullivan Principles, *The Global Sullivan Principles of Social Responsibility*, Available from <http://www.globalsullivanprinciples.org> visited on 27 December 2003.
- [46] Organisation for Economic Co-Operation and Development, *The OECD Guidelines for Multinational Enterprises 2000 Revision*, OECD Publication, Paris, 2000.
- [47] Caux Round Table, *Caux Round Table Principles for Business, English Translation*, Available from: <http://www.cauxroundtable.org/ENGLISH.htm> visited on 20 January 2003
- [48] Social Accountability International, *Overview of SA8000*, Available from: <http://www.cepaa.org/SA8000/SA8000.htm> visited on 4 March 2003.
- [49] AccountAbility, *Overview of the AA1000 framework*, AccountAbility Publication, London, 1999. Available from: <http://www.accountability.org.uk/uploadstore/cms/docs/AA1000%20Overview.pdf> visited on 29 December 2003.
- [50] Investors in People UK, *The Standard*, Available from: <http://iipuk.co.uk/IIP/Internet/InvestorsinPeople/TheStandard/default.htm> visited on 29 December 2003.

- [51] Ethical Trading Initiative, *Ethical Trading Initiative Homepage*, Available from: <http://www.ethicaltrade.org> visited on 29 December 2003.
- [52] Upham, P., *An Assessment of The Natural Step theory of sustainability*, Journal of Cleaner Production, Vol. 8, No. 6, 2000, pp 445-454.
- [53] Urban Environmental Management, *EMAS and Local Governments in Europe*, Available from: <http://www.gdrc.org/uem/iso14001/info-3.html> visited on 29 December 2003
- [54] Tibor, T., *ISO 14000: A guide to the New Environmental Management Standards*, IRWIN Professional Publishing, Chicago, 1996.
- [55] ISO, *ISO 9000 Family of Standards*, Available from: http://www.iso.ch/iso/en/iso9000-14000/iso9000/selection_use/iso9000family.html visited on 30 December 2003.
- [56] Baldrige National Quality Program, *Criteria for Performance Excellence*, National Institute of Standards and Technology, Gaithersburg, 2004.
- [57] EFQM, *EFQM Excellence Model*, Available from: http://www.efqm.org/model_awards/model/excellence_model.htm visited on 30 December 2003.
- [58] South African Excellence Foundation, *The South African Excellence Model & Self-Assessment*, Available from: <http://www.saeef.co.za/asp/assessment/default.asp> visited on 30 December 2003.
- [59] United Nations Commission on Sustainable Development, *Indicators of sustainable development: guidelines and methodologies*, United Nations, 2001. Available from <http://www.un.org/esa/sustdev/natinfo/indicators/indisd/indisd-mg2001.pdf>, visited on 19 November 2003
- [60] Global Reporting Initiative, *Sustainability Reporting Guidelines 2002*, Global Reporting Initiative, Boston, 2002.
- [61] Institution of Chemical Engineers, *The Sustainability Metrics: Sustainable Development Progress Metrics recommend for use in the Process Industries*, Institution of Chemical Engineers. Rugby, 2002.
- [62] Spangenberg, J.H., & Bonniot, O., *Sustainability Indicators – A Compass on the Road Towards Sustainability*, Wuppertal Paper No. 81, February 1998.
- [63] Labuschagne, C., Personal Communication with Joachim Spangenberg, 21 January 2004
- [64] Centre for Survey Research and Methodology (ZUMA), *Conceptual Framework and Structure of a European System of Social Indicators*, EuReporting Working Paper no 9, Mannheim, 2000.
- [65] Ethos Institute for Business and Social Responsibility, *ETHOS Corporate Social Responsibility INDICATORS*, Instituto Ethos de Empresas e Responsabilidade Social, São Paulo, 2001
- [66] Goodell, E. (editor), *Social Venture Networks: Standards of Corporate Social Responsibility*, Social Venture Networks, San Fransisco, 1999.
- [67] Danish Ministry of Social Affairs, KPMG, & Socialforskningsinstituttet, *Social Index: Measuring a Company's social responsibility*, Danish Ministry of Social Affairs, Copenhagen, 2000.
- [68] Wood, D.J., *Corporate Social Performance Revisited*, Academy of Management Review, Vol. 16, No.4, 1991, pp.691-718.
- [69] Wartick, S.L., & Wood, D.J., *International Business and Society*, Blackwell, Malden, MA, 1998.

- [70] Hopkins, M., *Defining Indicators to Access Socially Responsible Enterprises*, Futures, Vol. 29, No.7, 1997, pp. 581-603.
- [71] Knoepfel, I., *Dow Jones Sustainability Group Index: A Global Benchmark for Corporate Sustainability*, Corporate Environmental Strategy, Vol. 8, No. 1, 2001, pp. 6-15.
- [72] SAM Indexes, *Dow Jones Sustainability World Indexes Guide, Version 5.0*, SAM Indexes GmbH, Zollikon-Zurich, September 2003.
- [73] SAM Research Inc., *Corporate Sustainability Assessment Questionnaire 2003: General Part*, SAM Research Inc, Zollikon-Zurich, 9 April 2003.
- [74] Cerin, P., & Dobers, P., *Who is Rating the Raters?*, Corporate Environmental Strategy, Vol. 8, No. 2, 2001, pp. 95-97.
- [75] Cerin, P., & Dobers, P., *What does the Performance of the Dow Jones Sustainability Group Index tell us?*, Eco-Management and Auditing, Vol. 8, 2001, pp. 123-133.
- [76] FTSE, *FTSE4Good Index Series: Inclusion Criteria*, FTSE The Independent Global Index Company, London, 2003.
- [77] Reed, J., *Johannesburg Stock Exchange: Appealing to socially responsible niche investors*, Financial Times, 6 October 2003.
- [78] FTSE & JSE, *Launch of Draft FTSE/JSE SRI Index Philosophy and Criteria*, FTSE/JSE Press Release, 2 October 2003. Available from: http://ftse.jse.co.za/announcements/docs/sri_20021001.doc visited on 9 January 2004.
- [79] JSE, *JSE SRI INDEX: Background and Selection Criteria*, <http://www.jse.co.za/sri/docs/Background%20and%20Criteria.final.06%2010%2003.pdf> visited on 9 January 2004.
- [80] Domini Social Investments, *The Domini 400 Social IndexSM*, Available from: http://www.domini.com/Social-screening/creation_maintenance.doc_cvt.htm visited on 31 December 2003.
- [81] Domini Social Investments, *The Domini Story*, Available from: <http://www.domini.com/about-domini/The-Domini-Story/Index.htm> visited on 31 December 2003.
- [82] Equator Principles, *The Equator Principles*, Available from: <http://www.equator-principles.com/principles.shtml> visited on 14 April 2004
- [83] Daly, H.E., *Toward some operational principles of Sustainable Development*, Ecological Economics, Vol. 2, No. 3, 1990, pp. 1-6.
- [84] Briassoulis, H., *Sustainable Development and its indicators: Through a (planner's) glass darkly*, Journal of Environmental Planning and Management, Vol. 44, No. 3, 2001, pp. 409-427.
- [85] Holmberg, J., & Sandbrook, R., *Sustainable Development: What is to be done?*, In: Holmberg, J. (ed), *Policies for a Small Planet*, Earthscan, London, 1992, pp.19-38.
- [86] International Institute for Sustainable Development, Deloitte & Touche, & The World Business Council for Sustainable Development, *Business Strategies for Sustainable Development: Leadership and Accountability for the 90's*, International Institute for Sustainable Development, Winnipeg, 1992.

- Available from <http://www.iisd.org/publications/publication.asp?pno=242> , visited on 10 December 2003.
- [87] Hockerts, K., *The SusTainAbility Radar: A Tool for the Innovation of Sustainable Products and Services*, Greener Management International, Vol. 25, Spring, 1999, pp. 29-49.
- [88] PricewaterhouseCoopers, *2002 Sustainability Survey Report*, PricewaterhouseCoopers, August 2002.
- [89] Keeble, J.J., Topiol, S., & Berkeley, S., *Using Indicators to Measure Sustainability Performance at a Corporate and Project Level*, Journal of Business Ethics, Vol. 44, No.2/3, 2003, pp. 149–158
- [90] Du Toit, J., *Advanced Planning Implementation Methodology*, University of Pretoria, Unpublished Masters Thesis, Pretoria, 2003.
- [91] PricewaterhouseCoopers, *2002 Sustainability Survey Report*, PricewaterhouseCoopers, August 2002.
- [92] Bieker, T., Dyllick, T., Gminder, C.U., & Hockerts, K., *Towards a sustainability Balanced Scorecard linking environmental and social sustainability to business strategy*. In: Proceedings of the 2001 Business Strategy and the Environment Conference held at the University of Leeds, UK, 10 & 11 September 2001.
- [93] Zadek, S., *Stalking Sustainability*, Greener Management International, Vol. 26, Summer, 1999, pp.21-31.
- [94] Hedstrom, G., Poltorzycki, S., & Stroh, P., *Sustainable Development: The Next Generation of Business Opportunity*, Arthur D. Little: Prism-Sustainable Development: How Real, How Soon and Who's doing what?, No. 4, 1998, pp. 5-19.
- [95] Gladwin, T.N., Kennelly, J.J., & Krause, T-S., *Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research*, Academy of Management Review, Vol. 20, No. 4, 1995, pp. 874-907.
- [96] Project Management Institute, *PMBOK® Guide: A Guide to the Project Management Body of Knowledge*, Project Management Institute, Pennsylvania, 2000.
- [97] Buttrick, R., *The project workout: a toolkit for reaping the rewards from all your business projects*, Prentice Hall, London, 2000.
- [98] Kerzner, H., *Project Management: A Systems Approach to Planning, Scheduling and Controlling*. 7th Edition, John Wiley & Sons, Inc., New York, 2001.
- [99] Cooper, R.G., *Winning at New Products: Accelerating the process from idea to launch*, Basic Books, Cambridge, 2001.
- [100] Product Development Institute, Inc., *Stage-Gate® Process*, Available from: <http://www.prod-dev.com/stage-gate.shtml> visited on 25 July 2005.
- [101] Labuschagne, C., Personal Communication with environmental specialists in the South African process industry on 27/2/2002, 7/3/2002, 8/3/2002, 10/4/2002, 12/7/2002, 2/8/2002, 13/8/2002, 14/8/2002, 15/8/2002, 2002.
- [102] Wearne, S., *Book Reviews: The Management of Projects*, P.W.G. Morris, International Journal of Project Management, Vol. 14, No. 3, 1996, pp. 187-188.

- [103] Labuschagne, C., *Sustainable project Life Cycle Management: Criteria for the South African process industry*, Master Thesis, University of Pretoria, Pretoria, 2002.
- [104] Department of Environmental Affairs & Tourism, *Guideline Document: EIA Regulations: Implementation of Sections 21,22 and 26 of the Environment Conservation Act*, Department of Environmental Affairs & Tourism, Pretoria, 1998.
- [105] EurActiv.com, *Companies stress environmental over community issues in management practices*, EurActiv.com, 30 March 2004. Available from: <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4841> visited on 2 April 2004.
- [106] Lopes, M.D.S., & Flavell, R., *Project Appraisal – a framework to assess non-financial aspects of projects during the project life cycle*, International Journal of Project Management, Vol. 16, No. 4, 1998, pp. 223-233.
- [107] Van Pelt, M.J.F., *Ecologically sustainable development and project appraisal in developing countries*, Ecological Economics, Vol. 7, No. 1, 1993, pp. 19-42.
- [108] George, C., *Testing for Sustainable Development through Environmental Assessment*, Environmental Impact Assessment Review, Vol. 19, No. 2, 1999, pp. 175-200.
- [109] Financial Mail, *Top Companies*, Supplement to the Financial Mail, 28 June 2002.
- [110] Warhurst, A., *Sustainability Indicators and Sustainability Performance Management*, Mining, Minerals and Sustainable Development Paper No 43, March 2003.
- [111] Simon, A., & Thompson, D., *Aligning capital projects with the principles of sustainable development*, Corporate Social Responsibility and Environmental Management Conference, University of Leeds, 30 June to 1 July 2003.
- [112] Van Pelt, M.J.F., *Ecological sustainability and project appraisal*, Avebury, Aldershot, 1993.
- [113] Weiler, R., *No limits to Knowledge, but Limits to Poverty: Towards a Sustainable Knowledge Society*, Presentation on behalf of the Club of Rome delivered on Wednesday, 28 August 2002 at the University of Pretoria.
- [114] Denzin, N.K., & Lincoln, Y.S., *Handbook of Qualitative Research*, Sage Publications, Thousand Oaks, 1994.
- [115] Remer, D.S., & Nieto, A.P., *A compendium and comparison of 25 project evaluation techniques*, International Journal of Production Economics, Vol. 42, No. 1-2, 1995, pp. 79-129
- [116] Steyn, H., Basson, G., Carruthers, M., Du Plessis, Y., Kruger, D., Prozesky-Kuschke, B., Van Eck, S., & Visser, K., *Project Management: A multi-disciplinary approach*, Pretoria: FPM Publishing, 2002.
- [117] Forsberg, K., Mooz, H., & Cotterman, H., *Visualizing Project Management: A Model for Business and Technical Success*, 2nd Edition, John Wiley & Sons, New York, 2000.
- [118] Bonnal, P., Gourc, D., & Lacoste, G., *The life cycle of technical projects*, Project Management Journal, Vol. 33, No. 1, 2002, pp. 12-19
- [119] Merrifield, D., *Strategic Analysis, Selection, and Management of R&D Projects*, AMACOM, New York, 1977.

- [120] Buttrell, F.J., *Technology to Payoff: Managing the New Product Creation to Customer*, Creshei Publications, Philadelphia, 1984.
- [121] Hoo, D., *How to Develop and Market New Products ... Better and Faster*, New York: Association of National Advertisers Inc., 1985.
- [122] Feldman, L., & Page, A., *Principle vs Practice in New Product Planning*, Journal of Product Innovation Management, Vol. 1, Nr.1 , 1984, pp. 43-55.
- [123] Eggers, H., *Integrated project cycle management: roots and perspectives*, Project Appraisal, Vol. 9, No. 1, 1994, pp. 59-65.
- [124] Yahie, A.M., *Adapting the Project Cycle to Special Characteristics of Poverty Alleviation Projects*, Design and Management of Poverty Reduction Programs and Projects (1992: Kampala, Uganda), Economic Development Institute (Washington, D.C.) and Uganda Management Institute., Washington, D.C., World Bank, 1996.
- [125] Picciotto, Robert, & Weaving, Rachel, *A New Project Cycle for the World Bank?*, Finance and Development, December 1994.
- [126] Ward, S.C., & Chapman, C.B., *Risk-management perspective on the project lifecycle*, International Journal of Project Management, Vol. 13, No. 3, 1995, pp.145-149.
- [127] Morris, P.W.G., *Interface Manage – An Organization Theory Approach to Project Management*, Project Management Quarterly, Vol. 10, No. 2, 1979.
- [128] Kliem, R.L., Ludin, I.S., & Robertson, K.L., *Project Management Methodology: A Practical Guide for the Next Millennium*, Marcel Dekker, Inc., New York, 1997.
- [129] Blanchard, B.S., *Logistics Engineering and Management*, Fifth Edition, Prentice Hall International, New Jersey, 1998.
- [130] Schuman, C.A., & Brent, A.C., *Asset Life Cycle Management: Towards improving asset performance*, International Journal of Operations and Production Management, Vol. 25, No. 6, 2005, pp. 566-579.
- [131] Dingle, J. *Project Management: Orientation for Decision Makers*, Arnold, London 1997.
- [132] UNEP, SETAC, *Global life cycle initiative*, Available from: <http://www.unep.org/pc/sustain/lcinitiative/>, visited on 8 October 2003.
- [133] Graedel, T.E., *Streamlined Life-Cycle Assessment*, Prentice Hall, New Jersey, 1998.
- [134] Blanchard, B.S., & Fabrycky, W.J., *Systems Engineering and Analysis*, Third Edition, Prentice Hall International, New Jersey, 1998.
- [135] Schmidt, I., Saling, P., Reuter, W., Meurer, M., Kicherer, A., and Gensch, C-O., SEEbalance® - Managing Sustainability of Products and Processes with the Socio-Eco-Efficiency Analysis by BASF, *Greener Management International*, In Press.
- [136] Yarwood J.M., & Eagan, P.D., *Design for Environment Toolkit: A Competitive Edge for the Future*. Minnesota: Minnesota Office of Environmental Assistance and Minnesota Technical Assistance Program. Available from: <http://www.moea.state.mn.us/berc/dfetoolkit.cfm> visited on 30 June 2002.

- [137] Tyteca, D., *Sustainability Indicators at the Firm Level: Pollution and Resource Efficiency as a Necessary Condition towards Sustainability*, Journal of Industrial Ecology, Vol. 2, No. 4, 1999, pp. 61-77.
- [138] Veleva, V., & Ellenbecker, M., *A Proposal for Measuring Business Sustainability – Addressing shortcomings of Existing Frameworks*, Greener Management International, Vol. 31, Autumn, 2000, pp. 101-120.
- [139] Ranganathan, J., *Signs of Sustainability: Measuring Corporate Environmental and Social Performance*, In: Bennett, M. & James, P., (eds), *Sustainable Measures*, Greenleaf Publishing, Sheffield, 1999, pp 475-495.
- [140] Spangenberg, J.H., Pfahl, S. & Deller, K., *Development of Institutional Indicators*, SERI Publication. Available from: <http://www.seri.at/Data/personendaten/js/instituti.pdf> visited on 19 April 2004.
- [141] Spangenberg, J.H., Pfahl, S. & Deller, K., *Towards Indicators for institutional sustainability: lessons from an analysis of Agenda 21*, Ecological Indicators, Vol. 2, No. 1-2, 2002, pp. 61-77.
- [142] United Nations Conference on Environment And Development, *Agenda 21*, United Nations Publication, 1992. Available from: <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm> visited on 20 April 2004.
- [143] Brown, S., & Murray, K., *Bridging the Unsustainability Gap: A framework for sustainable development*, *Sustainable Development*, Vol. 12 (2), 2004, pp. 65-73.
- [144] World Business Council for Sustainable Development, *Corporate Social Responsibility: The WBCSD's journey*, World Business Council for Sustainable Development, January 2002. Available from <http://www.wbcsd.org/DocRoot/wYlpnLQLjKQfQ3lk0Oj/csr2002.pdf> visited on 9 December 2003.
- [145] Francis, P., & Jacobs, S., *Institutionalizing Social Analysis At The World Bank*, Environmental Impact Assessment Review, Vol. 19, No. 3, 1999, pp. 341-357.
- [146] Sasol, *Natural Gas Project: Social Development Action Plan (SDAP) for Mozambique*, http://w3.sasol.com/natural_gas//reports_docs/SDAP.pdf visited on 15 April 2004.
- [147] Bickham, E., *Corporate Responsibility*, Optima, Vol. 48, No. 1, 2002, pp. 32-51.
- [148] Ward, H., Borregaard, N., & Kapelus, P., *Corporate Citizenship – Revisiting the Relationship between Business, Good Governance and Sustainable Development*, IIEE WSSD Opinion, Johannesburg, 2002.
- [149] Swanson, D.L., *Addressing a theoretical problem by reorienting the Corporate Social Performance Model*, Academy of Management Review, Vol. 20, No. 1, 1995, pp. 43-64
- [150] Roome, N.J. (ed), *Sustainability Strategies for Industry: The Future of Corporate Practice*, Island Press, Washington, 1998.
- [151] Republic of South Africa, *National Environmental Management Act no 107 of 1998*, Government Gazette 1998, 19519.
- [152] Brent, A.C., Heuberger, R., Manzini, D., *Evaluating projects that are potentially eligible for Clean Development Mechanism (CDM) funding in the South African context: A case study to establish*

- weighting values for sustainable development criteria, *Environment and Development Economics*, in press, 2005
- [153] Brent, A.C., *A proposed lifecycle impact assessment framework for South Africa from available environmental data*, *South African Journal of Science*, Vol. 99, No. March/April, 2003, pp.115-122.
- [154] Olsthoorn, X., Tyteca, D., Wehrmeyer, W., & Wagner, M., *Environmental Indicators for business: a review of the literature and standardisation methods*, *Journal of Cleaner Production* Vol. 9, No. 5, 2001, pp.453-463.
- [155] Lehtonen, M., The environmental-social interface of sustainable development: capabilities, social capital, institutions., *Ecological Economics*, Vol. 49(2), 2004, pp. 199-214.
- [156] Roberts, S., Keeble, J., Brown, D., *The Business Case for Corporate Citizenship*, Arthur D. Little, Cambridge, 2002.
- [157] Visser, W., & Sunter, C., *Beyond Reasonable Greed: Why Sustainable Business is a Much Better Idea!*, Human & Rousseau, & Tafelberg, Cape Town, 2002
- [158] Ranganathan, J., *Sustainability Rulers: Measuring Corporate Environmental and Social Performances*, *Sustainable Enterprise Perspectives*, World Resources Institute Publication, Vol. May 1998, 1998.
- [159] Graedel, T.E., & Allenby, B.R., *Hierarchical Metrics for Sustainability*, *Environmental Quality*, Vol. 12, No. 2, 2002, pp. 21-30.
- [160] Clarkson, M.B.E., *A stakeholder framework for analyzing and evaluating corporate social performance*, *Academy of Management Review*, Vol. 20, No. 1, 1995, pp. 92-117.
- [161] Social Development Department, *Social Analysis Sourcebook: Incorporating Social Dimensions into Bank-supported Projects*, Washington D.C.: World Bank, 2003.
- [162] Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, *Guidelines and Principles for Social Impact Assessment*, *Environmental Impact Assessment Review* Vol.15, No.1, 1995, pp.11-43.
- [163] Vine, E., & Sathaye, J., *Guidelines for the Monitoring, Evaluation, Reporting, Verification and Certification of Energy-Efficiency Projects for Climate Change Mitigation*, U.S. Environmental Protection Agency through the U.S. Department of Energy under Contract No. DE-AC03-76SF00098, 1999.
- [164] South Sydney Council, *The South Sydney Plan: Social Impact Assessment Checklist*, <http://www.sccc.nsw.gov.au/router?model=c&item=1704> visited on 21 January 2004.
- [165] Khosa, M., *Social Impact Assessment of Development Projects*. In: Khosa M, editor. *Infrastructure Mandate for Change 1994 – 1999*, Human Sciences Research Council (HSRC) Publishers, Pretoria, 2000
- [166] Vanclay, F., *Conceptualising social impacts*, *Environmental Impact Assessment Review*, Vol. 22, No. 3, 2002, pp.183-211.
- [167] Branch, K., Hooper, D.A., Thompson, J., & Creighton, J., *Guide to Social Assessment: A framework for assessing social change*, London: Westview Press, 1984.

- [168] Shell International Exploration and Production, *Social Impact Assessment EP 95-0371*, HSE Manual Volume 3, 1996.
- [169] Levett, R., *Sustainability Indicators – integrating quality of life and environmental protection*, Journal of the Royal Statistics Society, Vol. 161, No. 3, 1998, pp. 291-302.
- [170] Du Plessis, A., *A Conceptual Framework for Corporate Social Responsibility: Internal, External and Beyond?* IPM Journal, Vol. 5, No. 10, 1987, pp. 12-13.
- [171] Deni Greene Consulting Services, Standards Australia & Ethical Investment Services, *A Capital Idea: Realising Value from environmental and social performance*, Deni Greene Consulting Services, North Carlton, August 2001.
- [172] Van Gass, I.G., *Social Responsibility Programmes in the Mining Industry: A Labour Relations Perspective*, South African Journal of Labour Relations, Vol. 8, No. 4, 1984, pp. 49-56.
- [173] Carroll, A.B., *The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders*. Business Horizons, July-August 1991, pp. 39-48.
- [174] Leana, C.R., & Van Buren III, H.J., *Organizational Social Capital and Employment Practices*, Academy of Management Review, Vol. 24, No. 3, 1999, pp.532-555.
- [175] Statistics South Africa, *Recent Employment Data from the Labour Force Survey*, <http://www.thedti.gov.za/econdb/eoverviewlfsweb.doc> visited on 2 February 2004.
- [176] Department of Labour, *ILO Report on: The Social Impact of Globalisation*, <http://www.labour.gov.za/docs/reports/iareport1.html> visited on 4 February 2004.
- [177] Republic of South Africa, *Basic Conditions of Employment Act*, Act no 75 of 1997, South Africa 1997.
- [178] Freaan, Alexandra, *Corporate Aid or plain hypocrisy?*, The Times, 2 February 2004, pp. 27.
- [179] International Labour Organisation, *What are the international labour standards?*, <http://www.ilo.org/public/english/standards/norm/whatare/index.htm> visited on 30 January 2004.
- [180] International Labour Organisation, *Fundamental ILO Conventions*, <http://www.ilo.org/public/english/standards/norm/whatare/fundam/index.htm> visited on 30 January 2004.
- [181] Statistics South Africa and The Department of Labour, *Survey of Activities of Young People in South Africa 1999: Country report on children's work-related activities*, Statistics South Africa, Pretoria, 2001.
- [182] Statistics South Africa and The Department of Labour, *Survey of Activities of Young People in South Africa 2000*, <http://www.labour.gov.za/docs/presentations/labourlaw/childlabour/index.htm> visited on 5 February 2004.
- [183] Labuschagne, C. Personal communication with Ian Macun, Executive Manager:Labour Market Information & Statistics, Department of Labour, South Africa, 2004.
- [184] Isaacs, Z., *Focus on health and safety intensifying*, Engineering News, Vol. 23, No. 37, 2003, pp. 52, 58.

- [185] Hermes Database, *The Business Case for Health and Safety – HSC Unveils New Case Studies*, <http://www.wbcsd.org/plugins/DocSearc/details.asp?type=DocDet&DocId=3887> visited on 6 February 2004.
- [186] The Press Trust of India, *Dow chemical shareholders ask it to address Bhopal liability*, The Press Trust of India, 26 November 2003. Available at <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=3179> visited on 1 December 2003.
- [187] Koopman, A., *Toward social responsibility*, Finance Week, Vol. 33, No.12 (18-24 June), 1987, pp. 641-642.
- [188] Moser, C.O., *The Asset Vulnerability Framework: Reassessing Urban Poverty Reduction Strategies*, World Development, Vol. 26, No.1, 1998, pp. 1-19.
- [189] Malan, L., *Sasol One Natural Gas Project EIA: Social Impact Assessment*, Calmare Social Impact Assessment Consulting, Noordhoek, 2001, Available from: http://www.sasol.com/natural_gas/ visited on 11 February 2004.
- [190] Marchione, M., *Businesses discover the value of fighting AIDS*, Milwaukee Journal Sentinel, 14 March 2004. Available from: <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4439> visited on 19 March 2004.
- [191] Anonymous, *Responsibility – good business sense*, Boardroom, Vo. 3, 1999, pp. 14, 16-18.
- [192] Browne, J., *The role of Multinational Corporations in Economic and Social Development of Poor Countries: Leading toward a better world?*, Corporate Environmental Strategy, Vol. 9, No. 3, 2002, pp. 217-225.
- [193] Ansara, T., *The key to sustainable economic growth*, IPM Journal, Vol. 10, No. 1, 1991, p.5.
- [194] Mthembi-Nkondo, S., *Government encourages corporate social investment*, Housing in Southern Africa (HAS), June 1996, pp. 23-24.
- [195] Dunstan, J., *Corporate Action on Affordable Housing*, IPM Journal, Vol. 7, No. 6, pp. 4-8.
- [196] Van Erck, R.P.G., *A monetary evaluation of the sustainability of GTL fuel production in South Africa*, Master Thesis submitted to Faculty of Technology Management, Technical University Eindhoven, Eindhoven, 2003.
- [197] Eddie Weekly, *Coca Cola accused on causing water shortages*, 25 July 2003, Retrieved from: <http://www.edie.net/news/archive/7311.cfm> visited on 27 January 2004.
- [198] Eddie Weekly, *Coca Cola ordered to stop using local groundwater*, 19 December 2003, Retrieved from: <http://www.edie.net/news/archive/7887.cfm> visited on 27 January 2004.
- [199] Goyder, G., *The Responsible Company*, Basil Blackwell, Oxford, 1961.
- [200] Greenwood, M.R., *Community as a stakeholder: focusing on corporate social and environmental reporting*, The Journal of Corporate Citizenship, Winter 2001, pp. 31-45.
- [201] Barrow, C.J., *Social Impact Assessment: An Introduction*, Arnold, New York, 2000.
- [202] Aucoin, M.P., *Tapping into the history of the Trans-Alaska Pipeline*, Pipeline & Gas Journal, Vol. 224, No.6, 1997, pp.46-54.

- [203] Goodman, L.J., & Ignacio, R.S., *Engineering Project Management: The IPQMS Method and Case Histories*, CRC Press, New York, 1999.
- [204] Alaska Native Oil and Gas Working Group, *Oil and the Alaska Native Claims Settlement Act*, Retrieved from: <http://www.treatycouncil.org/Alaska%20Native%20Working.pdf> visited on 24 March 2004.
- [205] Mindfully: Natural Heritage, *Alaskan Native Activists Take a Firm Stand Against Oil and Gas, Launching a New Alliance*, Drillbits & Tailings, Vol. 8, No. 2, 2003. Available from: <http://www.moles.org/ProjectUnderground/drillbits/> visited on 24 March 2004.
- [206] Center for Urban Transportation Research, *Community Impact Assessment Handbook*, Department of Transportation, Florida, 2000.
- [207] Mpumalanga Department of Agriculture, Conservation and Environment, *Mpumalanga State of the Environment Report 2003*, Mpumalanga Department of Agriculture, Conservation and Environment, Nelspruit, 2003.
- [208] Xstrata, *Health, Safety, Environmental Management, Employee and Community Involvement Review 2002*, Xstrata, London, 2002.
- [209] Eskom, *Eskom Annual Report 2000: African and Globally Competitive*, Eskom, Sandton, 2000.
- [210] National Association for Clean Air, *Membership*, <http://www.naca.co.za/MEMBERSHIP.ASPX> visited on 20 April 2004.
- [211] Beamon, B.M., *Designing the Green Supply Chain*, Logistics Information Management, Vol.12, No.4, 1999, pp.332-342.
- [212] BMW World Plant Rosslyn, *Safety, Health and Environmental Report: Working towards sustainability: An integrated Safety, Health and Environmental Management System*, BMW South Africa, Rosslyn, 2000.
- [213] Baue, W., *Philips Extends Sustainability Expectations to Suppliers, Including Child Labor Ban*, SocialFunds.com, 29 March 2004. Available from: <http://www.wbcasd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4838> visited on 2 April 2004.
- [214] AFX News, *World's biggest companies undermining labour standards: Oxfam*, Agence France Presse, 8 February 2004. Available from: <http://www.wbcasd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=3923> visited on 16 February 2004.
- [215] Rowley, T.J., *Moving Beyond Dyadic Ties: A Network Theory of Stakeholder Influences*, Academy of Management Review, Vol. 22, No.4, 1997, pp. 887-910.
- [216] Freeman, R.E., *Strategic Management: A Stakeholder Approach*, Pitman/Ballinger, Boston, 1984.
- [217] Hopkins, M.J.D., *Sustainability in the Internal Operations of Companies*, Corporate Environmental Strategy, Vol. 9, No. 4, 2002, pp.398-408.
- [218] Greenwood, M., *The Importance of Stakeholders according to Business Leaders*, Business and Society Review, Vol. 106, No. 1, 2001, pp. 29-49.

- [219] Azapagic, A., *Developing a Framework for sustainable development indicators for the mining and minerals industry*, Journal of Cleaner Production, Vol. 12, No. 6, 2004, pp 639-662.
- [220] Yin, R.K., *Case Study Research: Design and Methods*, 2nd Edition, SAGE Publications, London, 1994.
- [221] Creamer, M., *QuickTrip: Plan to emulate US's best in petrol station roll-out*, Engineering News, Vol. 23, No.42, 2003, pp. 34-38.
- [222] Creamer, M., *The stick and the carrot of the big Project Turbo*, Engineering News, Vol. 23, No.42, 2003, pp. 30-32, 48-49.
- [223] Labuschagne, C., *Personal Communication with project team*, February 2004.
- [224] SAVE, *Sasol Ltd. - Sigma Colliery-Proposed North West Strip Mine (NWSM)*, Available from: <http://www.save.org.za/SasolInfo.htm> visited on 2 March 2005.
- [225] SAVE, *Alternatives*, Available from: <http://www.save.org.za/Alternative.htm> visited on 2 March 2005.
- [226] Labuschagne, C., *Personal Communication with Susan Sellschop*, 24 February 2005.
- [227] Farina, K., & Knoll, C., *Rebuilding a constructive relationship after litigation: The story of Sasol and SAVE – and the issue of strip mining adjacent to the Vaal River*, Urban Green File, January/February, 2001, pp. 18-19, 21,23.
- [228] Barnard, D., *Environmental Law for All: A Practical Guide for the Business Community, the Planning Professions, Environmentalists and Lawyers*, Impact Books, Pretoria, 1999.
- [229] Badenhorst, P.J., and Carnelly, M., *Application for a Mining License and the AUDI ALTERAM PARTEM Rule*, THRHR, 2000, pp. 689-698.
- [230] Walmsley Environmental Consultants, *Environmental Management Programme Report for the Sigma Colliery: North West Strip Operations, Volume II Main Report*, Walmsley Environmental Consultants, Report no W220/3, September 1997.
- [231] Allen, A., *Proposed coal mine may be lifeline to Sasol Chemicals and to town of Sasolburg*, Saturday Star, Available from: <http://www.save.org.za/Independent/sasol.htm> visited 2 March 2005.
- [232] Sasol Press Release, *Sasol Mining Investigates New Strip Mine*, Available from: <http://www.save.org.za/Sasol/press4.htm> visited on 2 March 2005.
- [233] Farina, K., *The SAVEing of Sigma*, Development in the Contemporary Constitutional State Conference, 2-3 November 2000, Available from: <http://www.kas.org.za/Publications/SeminarReports/Constitution&LawIV/farina.pdf> accessed on 28 February 2005.
- [234] Common Ground, *Natural Gas Project: Consolidated Executive Summary and Update*, Johannesburg, Sasol, July 2003. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [235] Mark Wood Consultants, *Natural Gas Project :Regional Environmental and Social Assessment*, Johannesburg, Sasol, July 2003. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.

- [236] Steyn, C.H., & Temba, E., *Natural Gas Project: Social Development Action Plan (SDAP) for Mozambique*, Sasol. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [237] Salema, B., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 5: Impact on Socio Economics*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [238] Salema, B., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 4: Socio Economic Impacts*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [239] Acer Africa, Heinsohn, D., & Milford, C., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 7: Public Health & Social Pathologies*, Johannesburg, Sasol, 2003. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [240] ACER (Africa) Environmental Management Consultants, *Natural Gas Project: Resettlement Planning and Implementation Programme*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [241] Jongens, A., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 10: Impact of Noise*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [242] Young, G., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 11: Impact on Sense of Place*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [243] Adamowicz, L., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 8: Impact of Archaeology*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [244] Adamowicz, L., Puita, S.D., Mathe, A., & Assane, Z.A.A., *Sasol Natural Gas Project: Mozambique to South Africa: Environmental Impact Study: Specialist Study 5: Impact on Cultural Heritage*, Johannesburg, Sasol, 2001. Available from: http://w3.sasol.com/natural_gas/ visited on 11 April 2005.
- [245] Roy F. Weston International, Realsearch and TMC, *Feasibility Study, Scoping Report and Preliminary Environmental Impact Assessment for a Hazardous Waste Treatment Facility*, Roy F. Weston International, Realsearch and TMC, June 2001.
- [246] Groundwork, *Press Release 9 October 2002: Hazardous Waste Incinerator Proposal for Sasolburg defeated by civil society groups*, Press Release, 9 October 2002. Available from: http://www.groundwork.org.za/Press%20Releases/pr_sasolburg_victory.htm visited on 9 February 2004.
- [247] Labuschagne, C., *Personal Communication with Peacock Bay Environmental Services*, February 2005.
- [248] Roy F. Weston International and Realsearch, *Final Scoping Report And Preliminary Environmental Impact Assessment For A Hazardous Waste Treatment Facility*, Roy F. Weston International and Realsearch, February 2002.

- [249] Peek, B., *groundWork's comment on the preliminary EIA*, Available from: <http://www.groundwork.org.za/PBES.htm> visited on 2 March 2005.
- [250] Legal Resources Centre, *Environmental Justice Project Report 2002*, Legal Resources Centre, Johannesburg, 2002.
- [251] Rebelo, E., *Local fuel cells, biodiesel research under way*, Engineering News, Vol. 23, No. 2003, p.8.
- [252] Manyathi, O., *BEE Keeper: Petrochemical giant approves framework for sustainable black economic empowerment*, Engineering News, Vol. 24, No. 19, 2004, pp.22, 60-62.
- [253] Hjelt, P., *The World's Most Admired Companies*, Fortune, Vol. 147, No. 4, 2003, pp. 24-32.
- [254] BP, *Environmental and Social Review*, BP Distribution Services, Surrey, 2003.
- [255] The Dow Chemical Company, *The Dow Global Public Report*, The Dow Chemical Company, Michigan, 2003.
- [256] Royal Dutch/Shell Group of Companies, *The Shell Report: Meeting the Challenge*, Royal Dutch/Shell Group of Companies, The Hague, 2003.
- [257] Royal Dutch/Shell Group of Companies, *Financial and Operational Information 1998 – 2002*, Royal Dutch/Shell Group of Companies, The Hague, 2003.
- [258] Anglo American, *Anglo American Report to Society: Towards Sustainable Development*, Anglo American Corporate Communications Department, London, 2003.
- [259] BHP Billiton, *Health Safety Environment and Community Report: Policy into Practice*, BHP Billiton. Melbourne, 2003.
- [260] Sasol, *Sasol Sustainable Development Report: Share it with Sasol*, Sasol, Rosebank, 2003.
- [261] Bayer, *Sustainable Development: Bayer's commitment to society and the environment*, Bayer, 2002.
- [262] Dixon, C., *Mine Closure from a legal perspective: Do the provisions of the New Mineral and Petroleum Resources Development Act and draft Regulations make closure legally attainable?*, SAIMM Journal, Volume 103, No. 8, 2003, pp. 483-488.
- [263] Sasol, *Sustainable Development: Sasol Safety, Health and Environmental Report 2000 (for the period 26 June 1998 to 25 June 2000)*, Sasol, Johannesburg, 2000.
- [264] Spoor, R., *Mining Companies deep in debt*, Sunday Times: Insight, 23 March 2003.
- [265] Kruger, H., *Asbesrommelwerf, 50/50*, 30 July 2000. Available from: <http://www.5050.co.za/inserts.asp?ID=2509> visited on 12 April 2005.
- [266] Issacs, Z., *Focus on health and safety intensifying*, Engineering News, Vol. 23, No.37, 2003, pp. 52,58.
- [267] Delbecq, André L., Van de Ven, Andrew H., & Gustafson, David H. , *Group techniques for program planning: A guide to nominal group and Delphi processes*, Green Briar, Middleton, 1986.
- [268] Construction Industry Institute, *How was the PDRI Developed?*, Available from: <http://construction-institute.org/pdri/pdri-is.cfm> visited on 26 March 2005.
- [269] Bekker, M.C., & Steyn, H., *Towards a Project Governance Model for Large Capital Projects*, PICMET Conference Proceedings, 2005, In Press.

- [270] World Bank: Social Development Department, *A User's Guide to Poverty and Social Impact Analysis: Annex: Economic and Social Tools for Poverty and Social Impact Analysis*, World Bank, Washington, May 2003.
- [271] Brent, A.C., *Development of a Life Cycle Impact Assessment procedure for Life Cycle Management in South Africa*, Doctoral Thesis, University of Pretoria, 2004.
- [272] Editorial Committee of WIA-2, *Best Available Practice Regarding Impact Categories and Category Indicators in Life Cycle Impact Assessment*, International Journal of Life Cycle Assessment, 4(3): 167-174, 1999.
- [273] Labuschagne, C., *Personal Communication with Nigel Bragg, Statssa: NSS*, March 2005.
- [274] Statistics South Africa, *Stats Online: The Digital face of Stats SA*, Available from: <http://www.statssa.gov.za/> visited on 18 April 2005.
- [275] Department of Transport, *Department of Transport: Library*, Available from: <http://www.transport.gov.za/library/index.html> visited on 19 April 2005.
- [276] Council for Scientific and Industrial Research, *Council for Scientific and Industrial Research*, Available from: <http://www.csir.co.za/> visited on 19 April 2005.
- [277] Department of Health, *Department of Health: Documents*, Available from: <http://www.doh.gov.za/docs/reports-f.html> visited on 19 April 2005.
- [278] Department of Labour, *Department of Labour: All about accidents*, Available from: http://www.labour.gov.za/subjects/subject_display.jsp?parCat_id=7833&subject_id=7890 visited on 19 April 2005.
- [279] NOSA International, *NOSA International: Occupational Safety, Health and Environmental Risk Management*, Available from: <http://www.nosa-int.com/default1.asp> visited on 19 April 2005.
- [280] Municipal Demarcation Board, *Municipal Profiles*, Available from: <http://www.demarcation.org.za/municprofiles2003/index.asp> visited on 19 April 2005.
- [281] Labuschagne, C., *Personal Communication with Christa Joubert, NOSA*, March 2005
- [282] Complaint Commissioner, *Compensation for Occupational Injuries and Diseases Act, 1993: Report on the 1999 Statistics*, Available from: http://www.labour.gov.za/useful_docs/doc_display.jsp?id=9581 visited on 14 April 2005.
- [283] CEROI, *City Environmental Indicators Encyclopedia*, Available from: http://www.ceroi.net/ind/all_ind.asp visited on 31 March 2005.
- [284] Development Planning and Research cc, *Specialist Study 16: Macro Social Economic Impact Assessment of Sigma Colliery's Proposed North West Strip Operation*, Johannesburg, Walmsley Environmental Consultants (Pty) LTD, December 1996.
- [285] O'Beirne, S., Boer, A., & Hong, Y., *A Strategic Environmental Assessment (SEA) for Sasol Secunda: Final Report*, Sasol & CSIR, September 2000.
- [286] O'Beirne, S., Boer, A., Kornelius, G., Scholtz, S., & Hong, Y., *A Strategic Environmental Assessment (SEA) for Sasol Secunda: Executive Summary*, Sasol & CSIR, September 2000.
- [287] CSIR: Environmentek, *Durban South Basin Strategic Environmental Assessment (Durban Metropolitan Area)*, CSIR Project No: JX01J, Congella, August 1999.

- [288] CEROI Cities, *Global Core Set of Statistical Indicators: Durban Metro*, Available from: <http://www.ceroi.net/reports/durban/indicatr/globe.htm> visited on 11 February 2005.
- [289] Department of Water Affairs and Forestry, Waste Management Series: Minimum Requirements for Waste Disposal by Landfill, Second Edition, Pretoria, DWAF, 1998.
- [290] Bloor, M., Frankland, J., Thomas, M. and Robson, K., *Focus groups in social research*. London: SAGE, 2001.
- [291] Stewart, D.W., & Shamdasani, P.N., *Focus Groups: Theory & Practice*, SAGE Publications, London, 1990.
- [292] Greenbaum, T.L., *The handbook of Focus Group Research*, 2nd Edition, SAGE Publications, London, 1998.
- [293] OECD, *Measuring Sustainable Development: Integrated Economic, Environmental and Social Frameworks*, Paris, Organisation for Economic Co-operation and Development, 2004.
- [294] Kelcey, J.G., Environmental Impact Assessments – Their Development and Application, *Long Range Planning*, Vol. 19(1), 1986, pp. 67-79.
- [295] Narchal, R.M., Kittappa, K., & Bhattacharya, P., An Environmental Scanning System for Business Planning, *Long Range Planning*, Vol. 20 (6), 1987, pp. 96-105.
- [296] DEAT, *Specialist Studies, Information Series 4*, Pretoria, Department of Environmental Affairs and Tourism (DEAT), 2002.
- [297] Lichfield, N., Environmental Planning: Environmental Impact Assessment in project appraisal in Britain, *Project Appraisal*, Vol. 3(3), 1988, pp. 133-141.
- [298] NASA Pre-Project Planning Team, *PDRI: Project Definition Rating Index: Use on NASA Facilities*, NASA, April 2000.
- [299] Dumont, P.R., Gibson, G.E., & Fish, J.R., Scope Management Using Project Definition Rating Index, *Journal of Management in Engineering*, Vol. 13 (5), 1997, pp. 54-60.
- [300] Labuschagne, C., *Personal Communication with project experts*, March 2005.
- [301] Office of Project Management, EM-6, US Department of Energy, *Office of Environmental Management Project Definition Rating Index Manual*, US Department of Energy, February 2001.
- [302] Roodt, A., Social Responsibility – a key strategic issue, *IPM Journal*, Vol. 5(10), 1987, pp. 4
- [303] Al-Subhi Al-Harbi, Kamal M., Application of the AHP in project management, *International Journal of Project Management*, Vol. 19(1), 2001, pp. 19-27.
- [304] Becker, H.A., Social Impact Assessment, *European Journal of Operational Research*, Vol.128 (2), 2001, pp.311-321.
- [305] Wikipedia Encyclopedia, *Multi Criteria Decision Analysis*, Available from: http://en.wikipedia.org/wiki/Multi-Criteria_Decision_Analysis accessed on 29 March 2005.
- [306] Hockerts, K., The SusTainAbility Radar, *Greener Management International*, Issue 25 Spring Edition, 1999, pp. 29-49.
- [307] Winston, W.L., *Operations Research: Applications & Algorithms*, 3rd Edition, Belmont, Duxbury Press, 1994.

- [308] Heuberger, R. & Brent, A.C. *Sustainability Assessment of CDM projects: Decision analysis methods to assist with LCIA weighting*, Presentation delivered at WSSD: Science at the Summit: South African Life Cycle Assessment activities in the global marketplace, 2002.
- [309] Mulder, J., *Project Selection Criteria for Landscape Projects*, Master's Project, Department of Engineering and Technology Management, University of Pretoria, 2003.
- [310] Saaty, T.L., *The analytic hierarchy process*. New York: McGraw-Hill, 1980.
- [311] Brent, A.C., & Visser, J.K., An environmental performance resource impact indicator for life cycle management in the manufacturing industry, *Journal of Cleaner Production*, Vol. 13 (6), 2005, pp. 557-565.
- [312] Kaplan, R.S., & Norton, D.P., The Balanced Scorecard – Measures That Drive Performance, *Harvard Business Review*, January-February 1992, pp. 71-79.
- [313] Sim, K.L. & Koh, H.C. Balanced Scorecard: A rising trend in strategic performance measurement. *Measuring Business Excellence*, 5(2), 2001, pp.18-26.
- [314] Kaplan, R.S., & Norton, D.P., *The Balanced Scorecard*, Boston MA: Harvard Business School Press, 1996.
- [315] Kaplan, R.S., & Norton, D.P., *The Strategy-Focused Organisation*, Boston MA: Harvard Business School Press, 2001.
- [316] Orssatto, R.J., Zingales, F.G.G., O'Rourke, A., Environment and Socio-Related Balanced Scorecard: Towards a Conceptual Framework, *Proceedings of the 2001 Business Strategy and The Environment Conference*, pp.263-173.
- [317] Figge, F., Hahn, T., Schaltegger, S. & Wagner, M., The Sustainability Balanced Scorecard – Translating Strategy into Value-Based Sustainability Management, *Proceedings of the 2001 Business Strategy and The Environment Conference*, pp.93-102.
- [318] Bieker, T., Dyllick, T., Gminder, C-U., & Hockerts, K., Towards a Sustainability Balanced Scorecard linking Environmental and Social Sustainability to Business Strategy, *Proceedings of the 2001 Business Strategy and The Environment Conference*, pp.22-31.
- [319] Stewart, W.E. Balanced Scorecards for Projects. *Project Management Journal*. 32(1), 2001, pp. 38-53.
- [320] World Bank, *Putting Social and 'Green' Responsibility on the Corporate Agenda*, World Bank Press Release, Washington, 21 June 2001.
- [321] Trialogue, *The Good Corporate Citizen...pursuing sustainable business in South Africa*, Cape Town: Trialogue, 2005.
- [322] International Institute for Sustainable Development, *The Sustainable Development Timeline*, Third Edition prepared in advance of the World Summit on Sustainable Development, IISD, 2002.
- [323] Levett, R., Sustainability indicators – integrating quality of life and environmental protection, *Journal of the Royal Statistics Society*, Volume 161, Part 3, 1998, pp. 291-302
- [324] Harris, M., *A systems engineering approach to programme evaluation in technology-intensive domains*, Proceedings of the 19th International Conference of the Australasian Evaluation Society, Consolidate, Innovate, Expand, Canberra, Australia, 10-12 October 2001, pp. 1-13

[325] Iyengar, J., *Are companies like governments?*, Business Line, 27 January 2004. Available from: <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&DocId=3805>, accessed on 4 February 2004.

[326] Macalister, T., *Browne lauds the noble purpose of making money*, The Guardian, 9 February 2005, Available from: <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectOd=13104>, accessed on 11 February 2005.

[327] Roner, L., *Giving up giving back?*, Ethical Corporation, 21 March 2005, Available from: <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13770> , accessed on 30 March 2005.

[328] Heldt Powell, J., *Nestle chief rejects the need to 'give back' to communities*, The Boston Herald, 9 March 2005. Available from: <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13539> , accessed on 30 March 2005.

[329] Gilding, P., *The profit motive is pure enough*, The Australian, 8 March 2005, Available from: <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13487> , accessed on 30 March 2005.

Table of Content

9.	Appendix A: Driving Forces for Business Sustainability	219
9.1	International Standards and Guidelines	219
9.1.1	United Nations' Global Compact	219
9.1.2	Global Sullivan Principles	221
9.1.3	OECD Guidelines for Multinational Companies	223
9.1.4	Caux Round Table Principles for Business	224
9.1.5	Social Accountability 8000	225
9.1.6	AA 1000 framework	226
9.1.7	Investors in People	228
9.1.8	Ethical Trading Initiative	229
9.1.9	The Natural Step Framework	230
9.1.10	International Environmental Management Standards	230
9.1.11	ISO Family of Standards	232
9.1.12	Quality & Excellence Models	235
9.1.13	Conclusion & Comparison	240
9.2	Frameworks to assess or measure Sustainable Development	242
9.2.1	United Nation's Commission on Sustainable Development's Indicators of Sustainable Development	243
9.2.2	Global Reporting Initiative	244
9.2.3	Azapagic & Perdan's Indicator Framework	246
9.2.4	IChem ^E Sustainability Metrics for the Process Industries	247
9.2.5	Wuppertal Institute's Indicators of Sustainable Development	248
9.2.6	European Union's Conceptual Framework of Social Indicators	249
9.2.7	General comments on the frameworks	250
9.3	Corporate Social Responsibility: Indicators, Measurements, Standards and Models.	251
9.3.1	Ethos Corporate Social Responsibility Indicators	251
9.3.2	Standards of Corporate Social Responsibility of the Social Venture Network	252
9.3.3	The Danish Ministry of Social Affairs' Social Index	253
9.3.4	Corporate Social Performance Model	255
9.4	Socially Responsible Investment	257
9.4.1	Dow Jones Sustainability Indexes	258
9.4.2	FTSE4Good Index	260
9.4.3	JSE SRI Index	261
9.4.4	Domini 400 Social Index SM	264
9.5	International Financing Corporations	265
9.5.1	The Equator Principles	265
9.5.2	World Bank	267
9.6	References	269

10.	Appendix B: Universe as a Tripartite World	276
10.1	The Universe as a Tripartite World	276
10.2	Business and its surrounding Environments	278
10.3	References	280
11.	Appendix C: Corporate Response to Changing Expectations	282
11.1	Corporate Social Responsibility to Corporate Responsibility	282
11.1.1	From Corporate Responsibility to Corporate Sustainability	286
11.2	Corporate or Business Sustainability	287
11.2.1	Sustainable Development as a concept	287
11.2.2	Business Sustainability	289
11.3	References	290
12.	Appendix D: Analysis of Sustainable Development Reporting	293
12.1	Status of Sustainable Development Reporting	293
12.2	Analysis of Sustainable Development Reports	295
12.3	Reference	297
13.	Appendix E: Minimum Wages	299
14.	Appendix F: Case Study Protocol for the verification of the sustainability assessment framework	300
14.1	Overview of the first set of case studies	300
14.2	Framework Verification Part 1: Construction Phase	300
14.2.1	Field Procedures	300
14.2.2	Case Study Questions	301
14.3	Framework Verification Part 2: Operational Phase	301
14.3.1	Field Procedures	302
14.3.2	Case Study Questions	302
14.4	Framework Verification Part 3: Decommissioning Phase	304
14.4.1	Field Procedures	304
14.4.2	Case Study Questions	304
14.5	Summary	305
14.6	References	305
15.	Appendix G: Survey Questionnaire	306
15.1	Survey Design	306
15.2	Example of Survey Questionnaire	307
15.2.1	Information Page	307
15.2.2	General Questions	308
15.2.3	Main criteria	309
15.2.4	Social Criteria	312
16.	Appendix H: Additional Survey Results	314
16.1	Participants perception of Sustainable Development	314

16.2	95% Confidence Intervals of true proportions	315
17.	Appendix I: Indicators per criteria for each asset life cycle phase	319
17.1	References	371
18.	Appendix J: Social Aspects in asset life cycle	374
18.1	Internal Human Resources criteria through the asset life cycle phases	374
18.2	External Population criteria through the asset life cycle phases	379
18.3	Macro Social Performance criteria through the asset life cycle phases	384
18.4	Stakeholder Participation criteria through the asset life cycle phases	386
19.	Appendix K: Delphi Technique's Questionnaire	389
19.1	Questionnaire Round 1:	389
19.2	Questionnaire Round 2:	393
20.	Appendix L: Ways to address social criteria in projects	397
21.	Appendix M: Causal Relationships	407
22.	Appendix N: Delphi Technique Questionnaires	411
22.1	Questionnaire Round 1:	411
22.2	Questionnaire Round 2	413
23.	Appendix O: Information Availability	415
24.	Appendix P: Acrylic Fibre Plant - Information	425
24.1	Project Information	425
24.2	Social Footprint Information:	428
24.3	References	430
25.	Appendix Q: Social Questionnaires and Checklists for use in the project life cycle	431
25.1	Kick-Off Phase	431
25.1.1	Social Questionnaire	431
25.1.2	Social Checklist (for use at the end of the phase)	431
25.2	Pre-Feasibility Phase	432
25.2.1	Social Questionnaire	432
25.2.2	Social Checklist (for use at the end of the phase)	433
25.3	Feasibility Phase	433
25.3.1	Social Questionnaire	433
25.3.2	Social Checklist (for use at the end of the phase)	435
25.3.3	DEAT Method that needs to be applied in Feasibility Phase	436
25.4	Development Phase	437
25.4.1	Social Questionnaire	437
25.4.2	Social Checklist (for use at the end of the phase)	439
25.5	Execution & Testing Phase	439
25.5.1	Social Questionnaire	439
25.5.2	Social Checklist (for use at the end of the phase)	440
25.6	Launch Phase	441

25.6.1	Social Questionnaire	441
25.6.2	Social Checklist (for use at the end of the phase)	441
26.	Appendix R: Social Sustainability Tool for Projects (Internet Version)	442
26.1	Website Layout	442
26.2	Screen Captures of Website	442
26.2.1	Project Life Cycle Phases: Examples	443
26.2.2	Library Section	444
26.2.3	Evaluation Tool Section	446
27.	Appendix S: Examples of Existing Gate Questions	447
28.	Appendix T: Questionnaire	449

9. Appendix A: Driving Forces for Business Sustainability

9.1 International Standards and Guidelines

9.1.1 United Nations' Global Compact

Kofi Annan, Secretary-General of the United Nations, first proposed the United Nations' Global Compact at the World Economic Forum in Davos in 1999. The reasoning being that business should work in a spirit of enlightened self-interest, to make globalisation more inclusive to the world's poor populations by embracing and acting upon nine universal principles [A1]. These nine principles of the Global Compact (see Table 9-1) deal with three areas of concern, namely human rights, environmental protection and labour practices. The principles have been derived from:

- The Universal Declaration of Human Rights
- The International Labour Organisation's Declaration on Fundamental Principles and Rights at Work; and
- The Rio Declaration on Environment and Development (Outcome of the 1992 Earth Summit held in Rio) [A2].

Table 9-1: Nine Principles of the UN Global Compact [A2]

<p><i>Human Rights:</i></p> <p><u>Principle 1:</u> Businesses should support and respect the protection of international human rights within their sphere of influence; and</p> <p><u>Principle 2:</u> make sure their own corporations are not complicit in human rights abuses.</p>
<p><i>Labour:</i></p> <p><u>Principle 3:</u> Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining,</p> <p><u>Principle 4:</u> the elimination of all forms of forced and compulsory labour;</p> <p><u>Principle 5:</u> the effective abolition of child labour; and</p> <p><u>Principle 6:</u> the elimination of discrimination in respect of employment and occupation.</p>
<p><i>Environment:</i></p> <p><u>Principle 7:</u> Businesses should support a precautionary approach to environmental challenges;</p> <p><u>Principle 8:</u> undertake initiatives to promote greater environmental responsibility; and</p> <p><u>Principle 9:</u> encourage the development and diffusion of environmental friendly technologies.</p>

The mission of the Global Compact is “to contribute to more sustainable and inclusive global markets by embedding them in shared values” [A1] and all relevant actors are involved namely: governments, companies, labour forces, civil-society organisations (NGO's) as well as the United Nations. The Global Compact aims to foster a network-based approach at local, national, regional and local level. In order to do so the Global Compact makes use of four engagement mechanisms, namely:

- leadership – initiating change through the commitment of CEO's (and preferably the whole board of directors) to the principles;
- dialogue – creating a platform where all actors can engage to identify problems and find solutions in order to influence policy-making and stakeholder behaviour;
- learning – reinforcing dialogue through examples of good corporate practices that works; and
- outreach and networks- providing frameworks for action at national, regional or local level [A3].

The operational phase was launched in July 2000 [A2] and the heart of the network is the Global Compact Office in New York together with five core United Nations agencies, namely: Office of the High Commissioner for Human Rights, International Labour Organisation, United Nations Environmental Programme, United Nations Development Programme and United Nations Industrial Development Organisation [A1].

It is believed that there is no one way to incorporate the Global Compact principles into business activities [A2] but companies, signing up to the Global Compact, make the following commitments:

- The company will issue a clear statement of support for the Global Compact and its principles and will engage in public advocacy for the Compact.
- Once a year a concrete example of progress made or lessons learned in implementing the principles will be posted on the Global Compact website.
- The company will engage in partnerships with UN organisations by either undertake activities to promote the implementation of the principles or to enter strategic partnerships in support of wider UN goals [A4].
- The company must publish in its annual report or a similar corporate report a description of the ways in which the company supports the Global Compact and its nine principles [A2].

The Global Compact is a purely voluntary initiative and in December 2003 1884 participants have signed the Global Compact, of which 7 are based in South Africa [A2]. A key strength of the Global Compact is its emphasis on partnership and stakeholder engagement [A4]. The Global Compact is however not a performance or assessment tool nor does it provide a seal of approval. Nevertheless, in March 2004 the United Nations undertook an in-depth study to determine whether the initiative is having any measurable impact on businesses, i.e. whether the Compact is adding value to the sustainability debate that has been characterised more by anecdotal evidence than hard fact [A5]. However, a study by McKinsey & Co in 2004 concluded that the Global Compact has “*primarily accelerated policy change in companies, while catalyzing a proliferation of ‘partnership projects’, development-oriented activities that companies undertake with UN agencies and other partners*” [A6]. The Global Compact thus has had a noticeable, incremental impact on society and overall it has been a noteworthy force of positive change.

9.1.2 Global Sullivan Principles

Reverend Leon H. Sullivan developed the *Sullivan Principles* in 1977 as a code of conduct concerned with human rights and equal opportunity for companies operating in South Africa. This effort of Reverend Sullivan is acknowledged to have been one of the most effective attempts to end discrimination in the workplace in the pre 1994 South Africa [A7]. In 1997 together with a few multinational companies Reverend Sullivan revised the principles and in 1999 the Global Sullivan Principles of Social Responsibility was released [A8]. The principles are shown in Table 9-2. It consist of eight broad directives focusing on labour, business ethics and environmental practices. The concept of sustainable development is specifically mentioned in directive number five [A9].

Table 9-2: Global Sullivan Principles [A9]

As a company, which endorses the Global Sullivan Principles, we will respect the law, and as a responsible member of society we will apply these Principles with integrity consistent with the legitimate role of business. We will develop and implement company policies, procedures, training and internal reporting structures to ensure commitment to these Principles throughout our organization. We believe the application of these Principles will achieve greater tolerance and better understanding among peoples, and advance the culture of peace.

Accordingly, we will:

- 1. Express our support for universal human rights and, particularly, those of our employees, the communities within which we operate, and parties with whom we do business.*
- 2. Promote equal opportunity for our employees at all levels of the company with respect to issues such as color, race, gender, age, ethnicity or religious beliefs, and operate without unacceptable worker treatment such as the exploitation of children, physical punishment, female abuse, involuntary servitude, or other forms of abuse.*
- 3. Respect our employees' voluntary freedom of association.*
- 4. Compensate our employees to enable them to meet at least their basic needs and provide the opportunity to improve their skill and capability in order to raise their social and economic opportunities.*
- 5. Provide a safe and healthy workplace; protect human health and the environment; and promote sustainable development.*
- 6. Promote fair competition including respect for intellectual and other property rights, and not offer, pay or accept bribes.*
- 7. Work with governments and communities in which we do business to improve the quality of life in those communities-- their educational, cultural, economic and social well being--and seek to provide training and opportunities for workers from disadvantaged backgrounds.*
- 8. Promote the application of these Principles by those with whom we do business.*

We will be transparent in our implementation of these Principles and provide information which demonstrates publicly our commitment to them.

The Global Sullivan Principles have the following objectives:

- to support economic, social and political justice by companies in the societies in which they operate;
- to support human rights;
- to encourage equal opportunities at all levels of employment including gender and racial diversity on board and decision-making mechanisms in the company;
- to train and advance disadvantaged workers for technical, supervisory and managerial positions; and
- to assist with greater tolerance and understanding among people [A10].

These objectives help to achieve the principles’ ultimate goal, which is to improve the quality of life for all with dignity and equality [A10]. The principles provide a framework to align social responsible companies and any company can endorse the principles by publicly committing to incorporate the principles into procedures, operations and internal policies and to implement training and reporting structures [A11]. However, any organisation or association can also endorse the principles, but endorsing companies and organisations must participate in an annual reporting process. All reports are reviewed to measure the efforts and to highlight efforts of note and to ensure the sharing of best practices [A11]. On the 9th of October 2002 293 organisations have endorsed the Global Sullivan Principles [A12], the nature of these organisations are shown in Figure 9-1.

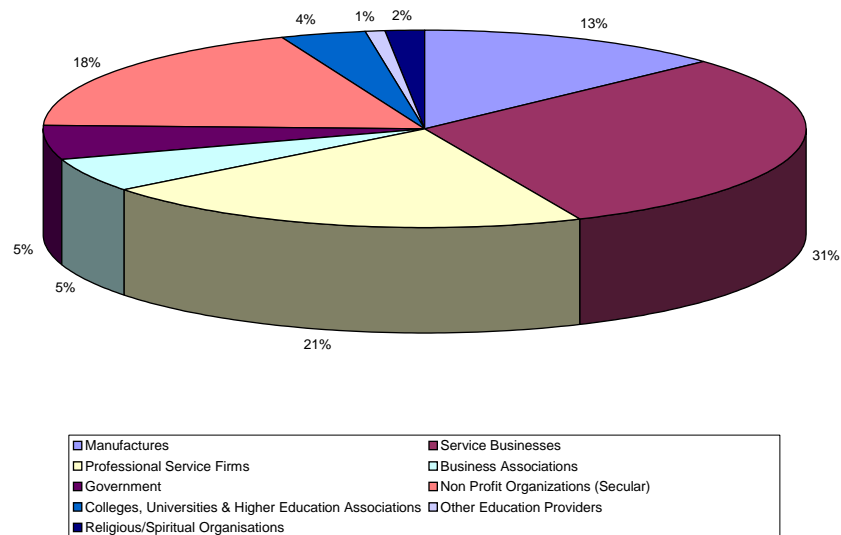


Figure 9-1: Distribution of the 293 endorsing organisations of the Global Sullivan Principles

The Global Sullivan Principles can be seen as a code of conduct for any organisation, although there is a level of reporting on progress and performance with implementation, the principles do not list

specific indicators to measure the performance with regards to the principles, i.e. performance with regards to labour, business ethics and environmental practices [A4].

9.1.3 OECD Guidelines for Multinational Companies

The Organisation for Economic Co-Operation and Development (OECD) published their revised guidelines for multinational companies in June 2000. These guidelines are recommendations of business conduct, which are addressed to multinational companies by participating governments. It offers voluntary principles and standards for responsible business conduct consistent with the applicable country's laws. The aims of these guidelines are to:

- ensure that the operations of a business are in harmony with government policies;
- strengthen the basis of mutual confidence between the business and the societies in which it operates;
- improve the foreign investment climate in a country; and
- enhance the contribution to sustainable development made by the multinational company [A13].

Although many multinational companies have developed their own codes of conduct, the OECD guidelines remains the only multilaterally endorsed and comprehensive code that governments are committed to promote [A13]. Businesses' adherence to the guidelines is purely voluntary, but governments who want to participate in implementing the guidelines sign a binding decision to promote their observance to companies operating in or from their country [A8]. In December 2003 38 governments have endorsed the OECD Guidelines for Multinational companies [A14]. The common aim of the governments adhering to the Guidelines is to encourage the positive contributions that multinational companies can make to sustainable development progress (i.e. economic, environmental and social progress) as well as minimising the negative impacts the business operations may have.

The OECD Guidelines cover nine areas of business conduct, namely:

- General Policies
- Disclosure
- Employment and Industrial Relations
- Environment
- Combating Bribery
- Consumer Interests
- Science and Technology
- Competition
- Taxation

For each of the nine areas standards and principles of good practice are listed. The guidelines further provide implementation guidelines for governments, but not specific processes for companies to follow. The guidelines can be seen as a mere general code of conduct, which businesses can use to

guide them in their conduct or in developing a company specific code of conduct [A4]. Although the national contact point, which each adhering government should establish, must annually report to the OECD on the progress made with implementation efforts, businesses do not formally report to the OECD on performance relative to the principles. Businesses are nevertheless encouraged to engage in triple bottom line reporting (Business Conduct area 2: Disclosure).

9.1.4 Caux Round Table Principles for Business

In 1986 Frederik Philips, former president of Philips Electronics and Olivier Giscard d'Estaing, Vice-Chairman of INSEAD founded the Caux Round Table (CRT). The aim of the organisation was to reduce escalating trade tensions and to promote the role of business and industry as a vital force for innovative global change. Members include business leaders of Europe, Japan and the United States [A15]. Since 1986 the CRT has grown into an international network of principled business leaders all working to promote moral capitalism [A16].

In 1994 through an extensive and collaborative process the CRT published an inspirational set of recommendations or principles for corporate business behaviour known as the CRT Principles for Business. The CRT regards the principles as a vision for ethical and responsible corporate behaviour that can serve as a foundation for action for business leaders worldwide [A17]. The principles are rooted in two ethical ideals namely:

- human dignity – meaning the sacredness or value of each person as an end and not as a mean to an end; and
- kyosei – a Japanese concept meaning “living and working together for the common good, enabling cooperation and mutual prosperity to coexist with healthy and fair competition” [A15].

The principles consist of three sections namely a preamble, general principles and stakeholder principles. The preamble describes the current globalisation trend and its problems and motivates business's role as a powerful agent of positive social change. The general principle section aims to clarify the spirit of the two ethical ideals and lists seven general principles with discussions of each. The seven general principles are:

- The Responsibilities of Business: Beyond Shareholders towards Stakeholders
- The Economic and Social Impact of Business: Toward Innovation, Justice and World Community
- Business Behaviour: Beyond the Letter of the Law toward a Spirit of Trust
- Respect for Rules
- Support for Multilateral Trade
- Respect for the Environment
- Avoidance of Illicit Operations

Section three is concerned with the practical application of these seven principles with regards to stakeholders. The section is structured around various stakeholders and states the responsibility of

business towards each of these stakeholders. The stakeholders mentioned are: Customers, Employees, Owners/Investors, Suppliers, Competitors and Communities [A15].

The CRT Principles for Business nevertheless remains a set of principles, and the real value of any set of principles lies in its use and implementation in everyday business activities. There are, however, no formal mechanism for corporate commitment to these principles [A8] and neither a set of indicators or method to measure performance with regards to the principles.

9.1.5 Social Accountability 8000

Social Accountability International (SAI), previously known as the Council of Economic Priorities Accreditation Agency (CEPAA), is a United States of America based non-profit organisation. In 1996 SAI convened an international multi-stakeholder advisory board to develop Social Accountability 8000 (SA 8000), an international standard, which aims to improve working conditions globally. The SA 8000 standard was issued in 1998 and reviewed once since then [A18].

The SA 8000 standard is a voluntary monitoring and certification standard for assessing labour conditions [A8]. It is based on the principles of eleven Conventions of the International Labour Organisation (ILO), the United Nations Convention on the Rights of the Child, and the Universal Declaration of Human Rights [A19]. The standard is modelled after the environmental and quality auditing processes developed by the International Standards Organisation (ISO 9000 and ISO 14000 standards) [A8]. The goal of the standard is to define requirements, which will enable a company to:

- develop, maintain and enforce policies and procedures in order to manage issues with regards to employment practices and working conditions which it can control or influence; and
- demonstrate to interested parties that policies, procedures and practices are in conformity with the standard [A4].

The standard cover nine areas of concern namely:

- Child labour
- Forced labour
- Health and safety
- Freedom of association and collective bargaining
- Discrimination
- Disciplinary practices
- Working hours
- Compensation
- Management systems [A20].

For each area of concern SAI lists the SA8000 requirements, the intent of SA8000, a sample checklist and examples of objective evidence that can be used to determine if the requirements are met [A19]. The standard encourages companies to work with their suppliers to implement a social accountability policy that can improve workplace conditions through technical assistance and increased awareness. The standard is thus concerned with two stakeholder groups, namely employees and suppliers. Companies can implement SA8000 in two ways, namely:

- Certification to SA8000: Operating facilities’ performance are audited against SA8000 criteria and facilities are certified as SA8000 compliant or not; and
- SA8000 Corporate Involvement Program: Companies first evaluate SA8000 as an ethical sourcing tool and then implement it over time in some or all of the supply chain, while regularly reporting publicly on the implementation progress [A20]. Organisations can also be granted accreditation by SAI, which enables them to perform SA8000 certification audits on their supply chain for example.

On the 31st of October 2003, 310 facilities have been certified as SA8000 compliant, which represented 36 industries and 38 countries worldwide. However, in South Africa only one facility has been certified as SA8000 compliant, namely Fairview Estate, a wine production estate in the Paarl [A21].

9.1.6 AA 1000 framework

AccountAbility, the Institute of social and ethical accountability launched the AccountAbility 1000 (AA1000) framework in November 1999. AA1000 is an accountability standard, which is focused on “securing the quality of social and ethical accounting, auditing and reporting” [A22]. It has been designed to improve accountability and performance with the focus on learning through stakeholder engagement. Furthermore, it addresses the need to incorporate stakeholder engagement practices into daily business activities [A23]. The AA1000 framework (see Figure 9-2) consists of principles and a set of process standards covering five stages [A24].

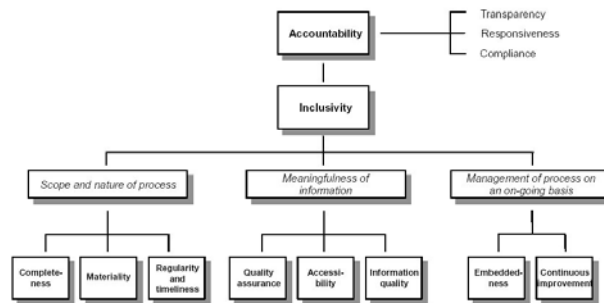


Figure 9-2: Principles of the AA1000 framework [A24].

The AA1000 process standards are focused around the organisation’s engagement with stakeholders, the fifth stage, and thus the process model only covers four stages as shown in Table 9-3.

Table 9-3: Process Model of the AA1000 framework [A22].

Stage	Processes
Planning	P1: Establish commitment and governance procedures. P2: Identify Stakeholders. P3: Define and review objectives, values and policies.
Accounting	P4: Identify issues upon which performance is assessed. P5: Determine scope of process. P6: Identify indicators of performance. P7: Collect information. P8: Analyse information, set targets and develop improvement plan.
Auditing & Reporting	P9: Prepare report(s) P10: Audit report(s). P11: Communicate results and obtain feedback
Embedding	P12: Establish and embed systems for continuous improvement

The framework covers all main stakeholders of a company and can be used in a variety of ways. Some of these uses are:

- Measurement tool
- Quality management tool
- Tool for recruitment and retention of employees
- Tool for external stakeholder engagement
- In partnerships with other organisations
- Risk management tool
- Assist in governance
- Tool for training [A4].

The AA1000 framework is also in the early stages of development and is currently trying to define the relationship between the standard and other standards, e.g. SA 8000, ISO 14000, ETI, etc. To the knowledge of AccountAbility, 77 organisations worldwide have used the AA1000 framework in one-way or another [A25].

On the 25th of March 2003 AccountAbility launched the AA1000 Assurance standard. The standard covers:

- the principles that define a robust and credible assurance process;
- the essential elements of a public assurance statement; and
- the independence, impartiality and competency requirements for assurance providers [A26].

9.1.7 Investors in People

Investors in People is a national quality standard of the United Kingdom, which establishes a level of good practice for improving any organisation's performance through its people. The specific focus of the standard is thus the training and development of staff in line with management and organisational objectives [A4] and it provides a national framework to improve business performance by following a planned approach to set and communicate organisational objectives. The standard was developed in 1990 by the United Kingdom's National Training Task force in partnership with leading businesses, personnel and employment organisation. Initially it was administrated by the Department of Education and Employment, but in 1993 a non-departmental public body, Investors in People UK was formed to take national ownership of the standard [A27]. The four principles and indicators of the standard are shown in Table 9-4.

Table 9-4: Principles and Indicators of Investment in People Standard [A28]

Principles	Indicators
Commitment An Investor in People is fully committed to developing its people in order to achieve its aims and objectives	1 The organisation is committed to supporting the development of its people
	2 People are encouraged to improve their own and other people's performance
	3 People believe their contribution to the organisation is recognised
	4 The organisation is committed to ensuring equality of opportunity in the development of its people
Planning An Investor in People is clear about its aims and its objectives and what its people need to do to achieve them	5 The organisation has a plan with clear aims and objectives which are understood by everyone
	6 The development of people is in line with the organisation's aims and objectives
	7 People understand how they contribute to achieving the organisation's aims and objectives
Action An Investor in People develops its people effectively in order to improve its performance	8 Managers are effective in supporting the development of people
	9 People learn and develop effectively
Evaluation An Investor in People understands the impact of its investment in people on its performance	10 The development of people improves the performance of the organisation, teams and individuals
	11 People understand the impact of the development of people on the performance of the organisation, teams and individuals
	12 The organisation gets better at developing its people

The Standard also list activities, which can be evidence of good performance or ways to measure the indicators. Organisations who want to become Investors in People apply for the standard and are then assessed by an external assessor who judges performance against the standard and subsequently awards

(or not) Investors in People. An Investor in People is subjected to regular reviews, which will at most be three years apart. The standard can be implemented in a wide range of companies and currently more than 32000 organisations are recognised as Investors in People [A27]

However, the indicators can be interpreted as prescriptive and, if this is the only form of consultation involving staff, the standard might be counter-productive if the staff sees no results, i.e. change in management practices [A4].

9.1.8 Ethical Trading Initiative

The Ethical Trading Initiative (ETI) is an alliance of companies, NGO's and trade union organisations committed to cooperate to identify and promote ethical trade. Ethical trade is defined as *“good practice in the implementation of a code of conduct for good labour standards, including the monitoring and independent verification of the observance of ethics code provisions as standards for ethical sourcing”* [A29]. The ETI developed a base code, which all members are expected to sign up to. The code concerns two stakeholders, namely: employees and suppliers and has nine elements with sub-elements.

The nine elements are:

- Employment is freely chosen
- Freedom of association and the right to collective bargaining are respected
- Working conditions are safe and hygienic
- Child labour shall not be used
- Living wages are paid
- Working hours are not excessive
- No discrimination is practised
- Regular employment is provided
- No harsh or inhumane treatment is allowed [A4].

One of the key strengths of the ETI base code is that, similar to SA8000, it is based on widely acknowledged ILO and UN standards. Although companies, NGO's and trade unions pay annual membership fees, it is not easy to become part of the ETI. An organisation, which wants to be considered for membership must do the following:

- indicate acceptance of the ETI's principles and purposes as well as commit to monitoring and independent verification; and
- indicate the willingness to participate in pilot projects and other ETI activities [A29].

In December 2003 ETI consisted of 55 organisations of which 34 were companies, 4 trade unions and 17 NGO's [A29]. This multi-constituency gives the initiative considerable credibility. However, the initiative is still in the early stages of existence and it is very involved in processes for development and improvement [A4].

9.1.9 The Natural Step Framework

Dr. Karl-Henrik Robèrt founded the Natural Step organisation in Sweden in 1989. Since then it has grown into an international organisation with a vision of the socially and ecologically sustainable society [A30]. The organisation has offices in 10 countries worldwide including South Africa [A31]. The organisation promotes a framework known as *The Natural Step Framework*, which can be used to orient public and corporate decision-making towards socio-ecological sustainability [A32]. The framework is based on four core principles also referred to as the four systems conditions for sustainability (See Table 9-5), which have been developed by an international network of scientists.

Table 9-5: Core Principles of the Natural Step Framework [A30].

<p><i>“In a sustainable society, nature is not subject to systematically increasing...</i></p> <ol style="list-style-type: none"> 1. <i>...concentrations of substances extracted from the Earth’s crust;</i> 2. <i>...concentration of substances produced by society;</i> 3. <i>...degradation of physical means;</i> <p style="text-align: center;"><i>and that in that society...</i></p> <ol style="list-style-type: none"> 4. <i>...human needs are met worldwide.”</i>

Some view the Natural Step Framework as a non-certified global standard that has no specific stakeholder focus [A4], while others see it as a methodology for all environmental planning [A30]. The framework has nevertheless been applied for strategic planning purposes in 60 Swedish corporations and municipal authorities [A32]. Nevertheless, the Natural Step framework is not prescriptive and it does not judge [A4]. With regards to social sustainability issues the Natural Step have started to work on the dimension and it is in a development phase [A33].

9.1.10 International Environmental Management Standards

The development of extensive environmental regulations, the constant growth in environmental awareness together with the increase in the cost of environmental protection as well as legal liabilities caused industry to rethink the role of environmental management in business practices. Engineers and technical people no longer possessed all the competencies needed to manage environmental issues and a more pro-active approach was needed. This resulted in the specialised field of environmental management. An integrated Environmental Management System (EMS) can assist a company to manage, measure and improve the environmental aspects of its operations [A34]. Various standards were and are being developed in an effort to standardize procedures in environmental management. The three major standards are ISO 14000, BS 7750 and the European Union’s EMAS. Table 9-6 compares the three standards [A35, A36, A37].

Table 9-6: Comparison between EMAS, BS 7750 and ISO 14000 [A35, A36, A37]

	BS 7750	EMAS	ISO 14000
Focus Area	Whole organization, can be applied to any sector or activity	Specific sites an/or industrial activities	Whole organization, covers all activities, products and services
Frequency of Audits	Not specified	Maximum audit frequency at three years	Not specified can be negotiated
Focus on Environmental Performance	Audit is not concerned with environmental performance	Auditing is concerned only with environmental performance and compliance with relevant environmental legislation.	It is a process standard; this implies that the standards does not tell companies what environmental performance they must achieve but it offers building blocks for an environmental management system that will assist companies in achieving their own performance goals
Information that must be publicly available	Environmental policy programme and management system	Environmental Policy	Environmental Policy
Countries	UK and a few other	European Union	Internationally
Application	Open to non-industrial activities ¹	Non-Industrial Activities included on experimental basis	Applicable to non-industrial activities
Date of Acceptance of Standard	1992	1993	1996
Criticized Aspects of standard	<ol style="list-style-type: none"> 1. Standard can be obtained by <i>promising</i> to improve. 2. Small companies find cost a problem. 	<ol style="list-style-type: none"> 1. Auditing Criteria are too vague. 2. It costs too much. 3. It badly disrupts activities of organizations. 4. It may generate hostility from the public and workforce. 	<ol style="list-style-type: none"> 1. Standard does not require sufficient public disclosure of company's environmental impacts. 2. Standard does not guarantee environmental performance or compliance with applicable national environmental legislation.

In South Africa ISO 14000 is the standard most often used for environmental management (see section 9.1.11 for a detail discussion), while BS 7750 has mostly been replaced by EMAS in the United Kingdom. The focus of these standards is nevertheless on the environmental dimension of sustainable development and social aspects are not generally included.

¹ Non-Industrial activities are activities like transport, local government, etc.

9.1.11 ISO Family of Standards

In 1946, delegates from 25 countries gathered in London and created a new international organisation to facilitate the international coordination and unification of industrial standards, the International Organisation for Standardisation (ISO). Currently, ISO is a network of national standards institutions of 148 countries (one member institution per country) with a Central Secretariat that coordinates the system based in Geneva, Switzerland [A38]. ISO has published more than 14000 international standards, the vast majority of these standards are highly specific standards focused on a particular product, process or material. Industries communicate the need for standards to ISO's national members and if ISO decides to develop the particular standard, the task to develop the standard is assigned to an ISO technical committee [A38].

The two most well known ISO standards are the ISO 9000- and ISO 14000 standards. ISO estimates that 610 000 organisations in 160 countries worldwide have implemented either one or both of these standards [A39]. These two standards are generic management system standards and not product standards. ISO 9000 was issued in 1987 and is primarily concerned with quality management and the focus is on what an organisation does to:

- fulfil customers' quality requirements;
- fulfil applicable regulatory requirements;
- enhance customer satisfaction; and
- achieve continuous improvement with regards to the pursuit of the three objectives [A40].

The ISO 9000 family of standards are shown in Table 9-7 [A41]

Table 9-7: ISO 9000 Family of standards [A41]

<i>Standard & Guidelines</i>	<i>Purpose</i>
<i>ISO 9000:2000, Quality management systems - Fundamentals and vocabulary</i>	<i>Establishes a starting point for understanding the standards and defines the fundamental terms and definitions used in the ISO 9000 family which you need to avoid misunderstandings in their use.</i>
<i>ISO 9001:2000, Quality management systems - Requirements</i>	<i>This is the requirement standard you use to assess your ability to meet customer and applicable regulatory requirements and thereby address customer satisfaction. It is now the only standard in the ISO 9000 family against which third-party certification can be carried.</i>

Table 9-7: ISO 9000 Family of standards [A41] (continues)

<i>ISO 9004:2000, Quality management systems - Guidelines for performance improvements</i>	<i>This guideline standard provides guidance for continual improvement of your quality management system to benefit all parties through sustained customer satisfaction.</i>
<i>ISO 19011, Guidelines on Quality and/or Environmental Management Systems Auditing (currently under development)</i>	<i>Provides you with guidelines for verifying the system's ability to achieve defined quality objectives. You can use this standard internally or for auditing your suppliers.</i>
<i>ISO 10005:1995, Quality management - Guidelines for quality plans</i>	<i>Provides guidelines to assist in the preparation, review, acceptance and revision of quality plans.</i>
<i>ISO 10006:1997, Quality management - Guidelines to quality in project management</i>	<i>Guidelines to help you ensure the quality of both the project processes and the project products.</i>
<i>ISO 10007:1995, Quality management - Guidelines for configuration management</i>	<i>Gives you guidelines to ensure that a complex product continues to function when components are changed individually</i>
<i>ISO/DIS 10012, Quality assurance requirements for measuring equipment - Part 1: Metrological confirmation system for measuring equipment</i>	<i>Give you guidelines on the main features of a calibration system to ensure that measurements are made with the intended accuracy</i>
<i>ISO 10012-2:1997, Quality assurance for measuring equipment - Part 2: Guidelines for control of measurement of processes</i>	<i>Provides supplementary guidance on the application of statistical process control when this is appropriate for achieving the objectives of Part 1.</i>
<i>ISO 10013:1995, Guidelines for developing quality manuals</i>	<i>Provides guidelines for the development, and maintenance of quality manuals, tailored to your specific needs.</i>
<i>ISO/TR 10014:1998, Guidelines for managing the economics of quality</i>	<i>Provides guidance on how to achieve economic benefits from the application of quality management.</i>
<i>ISO 10015:1999, Quality management - Guidelines for training</i>	<i>Provides guidance on the development, implementation, maintenance and improvement of strategies and systems for training that affects the quality of products.</i>
<i>ISO/TS 16949:1999, Quality systems - Automotive suppliers - Particular requirements for the application of ISO 9001:1994</i>	<i>Sector specific guidance to the application of ISO 9001 in the automotive industry.</i>

ISO 14000 was first issued in 1996 [A42], and focuses on environmental management and more specifically what an organisation does to:

- minimise harmful environmental effects caused by its activities; and
- achieve continual improvement with regards to its environmental performance

The ISO 14000 family of standards (see Figure 9-3) clearly distinguish between environmental management systems and environmental management tools. The standards take the view that the implementation of an EMS is of central importance in determining an environmental policy, objectives and targets for a company. The recommended environmental tools can assist a company in realizing these targets and objectives [A43].

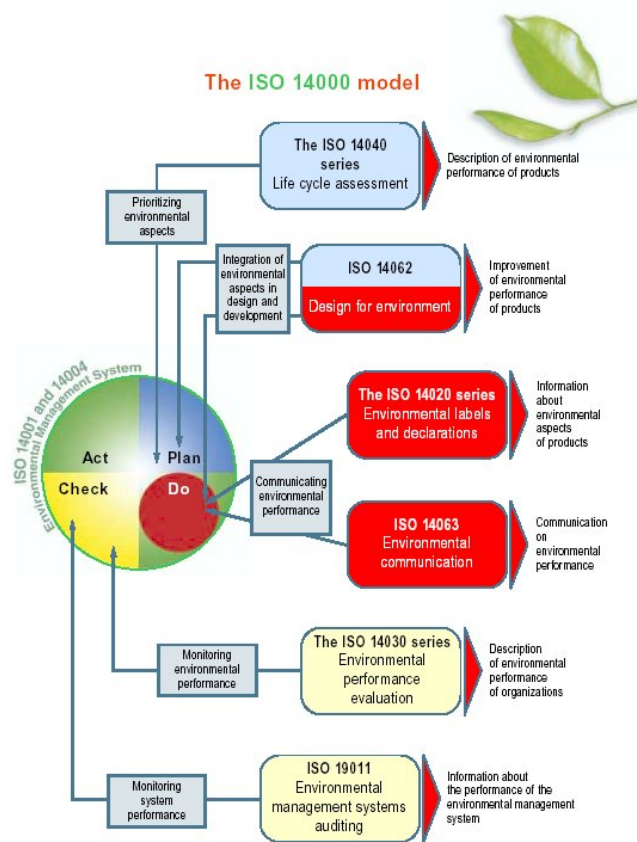


Figure 9-3: ISO 14000 family of standards

The ISO 9000 quality standard addresses one stakeholder group namely the customer, while ISO 14000 focuses on the environmental dimension of sustainability and thus on the environment as a stakeholder. Nevertheless, the focus of ISO 9000 and ISO 14000 is on the way in which an organisation do certain things and not on the results of the activities [A44].

9.1.12 Quality & Excellence Models

The Sigma Project regards the European Foundation Quality Model – Excellence Model as a standard or guideline relevant to sustainable development. In light of this the model together with two other Quality or Excellence Models have been chosen to analyse in more detail. The other two models are the Malcolm Baldrige National Quality Model and the South African Excellence Model.

9.1.12.1 European Foundation for Quality Management – Excellence Model

In 1988 14 Presidents of major European companies founded the European Foundation for Quality Management (EFQM). The European Commission endorsed the effort. The organisation was founded in order to develop a European framework for quality improvement along the lines of the Malcolm Baldrige Model in the USA. At the beginning of 1992 the European Model for Business Excellence, also known as the EFQM – Excellence Model, was published [A45]. The model can be used as a tool to develop a management system, which enables an organisation to be successful [A4]. The model is shown in Figure 9-4.

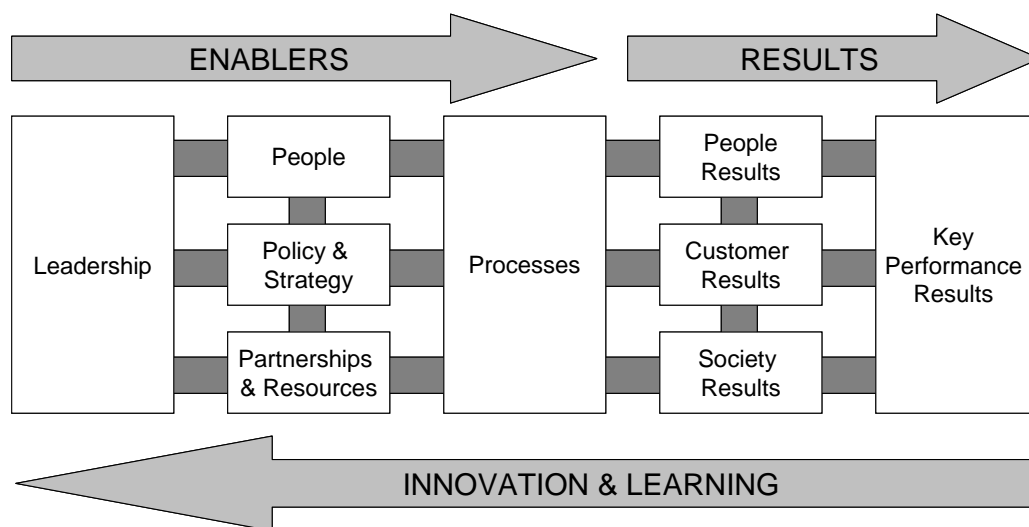


Figure 9-4: European Model for Business Excellence

The model consists of nine criteria of which five are enabler criteria and the other four results criteria. Enabler criteria cover the activities of the organisation i.e. what it does, while the results criteria cover what the organisation achieves. As can be seen in Figure 9-4 the enablers cause the results, while feedback from the results will help the organisation to learn, innovate and improve the enablers. The model is based on the premise that:

“Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People Partnerships and Resources , and processes” [A46].

Although the model is a general model for managing performance it addresses the following stakeholder groups:

- employees – People Enabler Criteria & People Results Criteria;
- customers – Customer Results Criteria;
- society – Society Results Criteria; and
- suppliers – Partnerships and Resources Enabler Criteria.

The EFQM model recognizes that there are many approaches to achieve sustainable excellence and thus it offers a non-prescriptive framework with some fundamental concepts. The fundamental concepts are summarised in Table 9-8.

Table 9-8: Fundamental Concepts of EFQM Excellence Model [A46]

<p>Results Orientation</p> <p>Excellence is achieving results that delight all the organisation’s stakeholders.</p>
<p>Customer Focus</p> <p>Excellence is creating sustainable customer value.</p>
<p>Leadership & Constancy of Purpose</p> <p>Excellence is visionary and inspirational leadership, coupled with constancy of purpose.</p>
<p>Management by Processes & Facts</p> <p>Excellence is managing the organisation through a set of interdependent and interrelated systems, processes and facts.</p>
<p>People Development & Involvement</p> <p>Excellence is maximising the contribution of employees through their development and involvement.</p>
<p>Continuous Learning, Innovation & Improvement</p> <p>Excellence is challenging the status quo and effecting change by using learning to create innovation and improvement opportunities.</p>
<p>Partnership Development</p> <p>Excellence is developing and maintaining value-adding partnerships.</p>
<p>Corporate Social Responsibility</p> <p>Excellence is exceeding the minimum regulatory framework in which the organisation operates and to strive to understand and respond to the expectations of their stakeholders in society.</p>

The Excellence Model is also the basis for judging entrants to the European Quality award, which has been awarded annually since 1992 [A45].

9.1.12.2 Malcolm Baldrige National Quality Program

On the 20th of August 1987 the United States Congress signed into law Public Law 100-107, which created the Malcolm Baldrige National Quality Award and Program. The goal of this was to enhance the competitiveness of the United States of America. Since 1988 the Malcolm Baldrige National Quality Award has been awarded annually [A47]. Currently, there are eight categories of awards namely: Manufacturing, Service, Small Business, Education: Not-for-profit, Education: For-profit with more than 500 faculty or staff members, Education: For-profit with less than 500 faculty or staff members, Healthcare with more than 500 staff members and Healthcare with less than 500 staff members.

Companies submit award applications to the Program. Up till 2003, there have been 939 applicants for the Malcolm Baldrige National Quality Award. Each applicant has received vigorous evaluations by the Board of Examiners using the Criteria for Performance Excellence developed by the Malcolm Baldrige National Quality Program. The criteria are divided into seven categories and can be viewed from a systems perspective (see Figure 9-5) [A48].

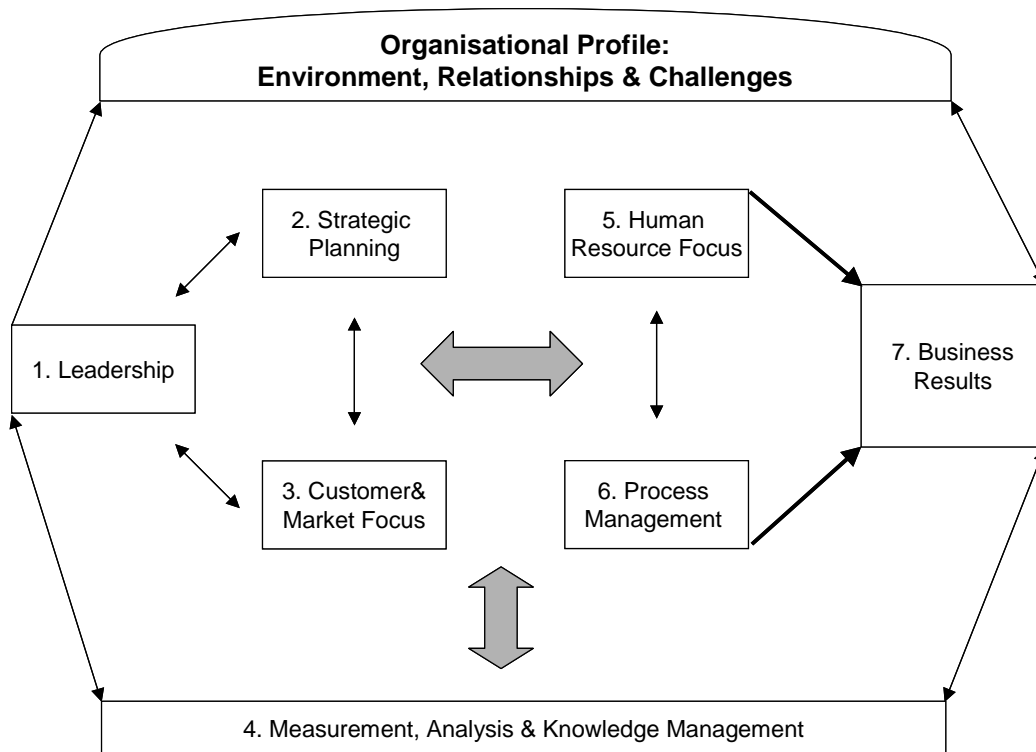


Figure 9-5: Malcolm Baldrige Criteria for Performance Excellence: A systems perspective [A48]

Each category consists of various items (19 in total), which, in turn, each consists of areas to address. Organisations must address their responses to the requirements of each area of concern, which are listed in the Baldrige documentation. The criteria assessment adds to 1000 points (see Table 9-9)[A48].

Any organisation can use the Baldrige framework of criteria to improve its overall performance since the framework can also be used for self-assessment (scoring guidelines are provided), which is highly recommended by the program. The Baldrige criteria address four types of performance, namely:

- customer-focused performance;
- product and service performance;
- financial and marketplace performance; and
- operational performance

The criteria is also build on a set of core concepts, these are: Visionary leadership, Customer-driven excellence, Organizational and personal learning, Valuing employees and partners, Agility, Focus on the future, Managing for innovation, Management by fact, Social responsibility, Focus on results and creating value and a Systems perspective.

Table 9-9: Baldrige Criteria Categories & Items [A48]

Criteria	Points
1. Leadership	120
1.1 Organisational Leadership	70
1.2 Social Responsibility	50
2. Strategic Planning	85
2.1 Strategy Development	40
2.2 Strategy Deployment	45
3. Customer & Market Focus	85
3.1 Customer & Market Knowledge	40
3.2 Customer Relationships & Satisfaction	45
4. Measurement, Analysis & Knowledge Management	90
4.1 Measurement and Analysis of Organizational Performance	45
4.2 Information & Knowledge Management	45
5. Human Resource Focus	85
5.1 Work Systems	35
5.2 Employee Learning & Motivation	25
5.3 Employee Well-being & Satisfaction	25
6. Process Management	85
6.1 Value Creation Processes	50
6.2 Support Processes	35

Table 9-9: Baldrige Criteria Categories & Items [A48] (continues)

7. Business Results	450
7.1 Customer-Focused Results	75
7.2 Product and Service Results	75
7.3 Financial and Market Results	75
7.4 Human Resource Results	75
7.5 Organizational Effectiveness Results	75
7.6 Governance and Social Responsibility Results	75
TOTAL	1000

The Baldrige Framework of criteria addresses the same stakeholder groups as the EFQM Excellence Model. The Baldrige Framework and the EFQM Excellence model differ in their approach to excellence and quality, but the content of the two models is very similar [A49]

9.1.12.3 South African Excellence Model

In August 1997 the South African Excellence Foundation was established. The foundation’s main purpose is to “manage and promote continuous improvement through the use of the South African Excellence Model (SAEM)” [A50]. The SAEM combines the best of the Baldrige National Quality Program in the USA and the EFQM Excellence Model [A50]. The process also relies on self-assessment to enable organisations to determine their level of performance excellence. An Awards programme offers recognition to companies. The Model consists of enabler and result criteria (see Figure 9-6) and the self-assessment again adds up to 1000 points [A51].

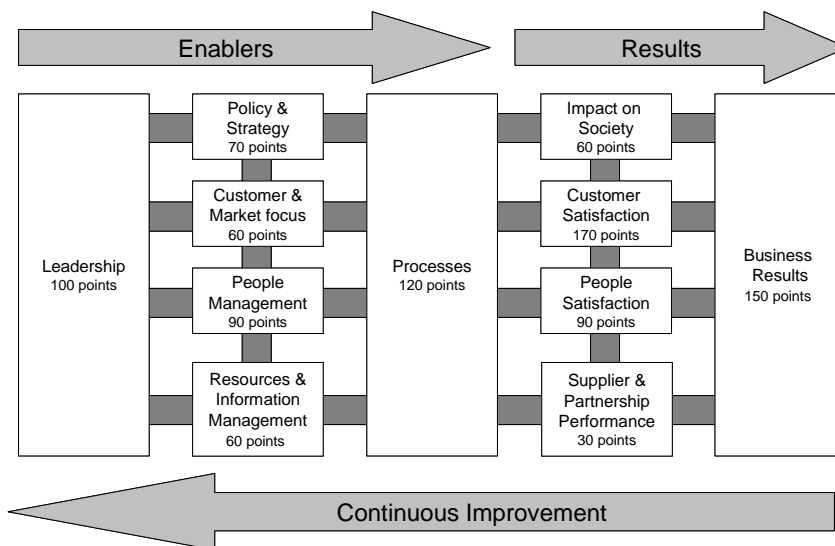


Figure 9-6: South African Excellence Model [A51]

In December 2003 the South African Excellence Foundation had 95 registered members [A52]. The foundation is also a member of the Global Network of Excellence Award Administrators and is recognised by the South African Department of Trade and Industry. Furthermore, the SADC Council of Ministers has in principle approved the use of the SAEM as a basis for the SADC Quality Award, which will be awarded in the near future [A50].

Criterion 7, namely impact on society, is very relevant to social business sustainability. The criteria looks at what the organisation is achieving in satisfying the needs and expectations of the local, national and international community at large. It consists of two sub-criteria namely:

- society’s perception of the organisation – 15 points (25% of the total points); and
- additional measurements of the organisation’s impact on society – 45 points (75% of the total points).

9.1.13 Conclusion & Comparison

The popularity and percentage of use of the various standards and guidelines differ dramatically, also between regions. The World Bank Group’s CSR Practice conducted a series of in-depth interviews with executives of 107 multinational enterprises (average annual revenues of US\$ 15.5 billion) in the extractive, agribusiness, and manufacturing sectors between December 2002 and March 2003 [A53]. One of the aspects discussed has been the influence of different standards or guidelines on the businesses. Figure 9-7 shows those standards identified by the most respondents as influencing their business (this excludes any industry specific standards).

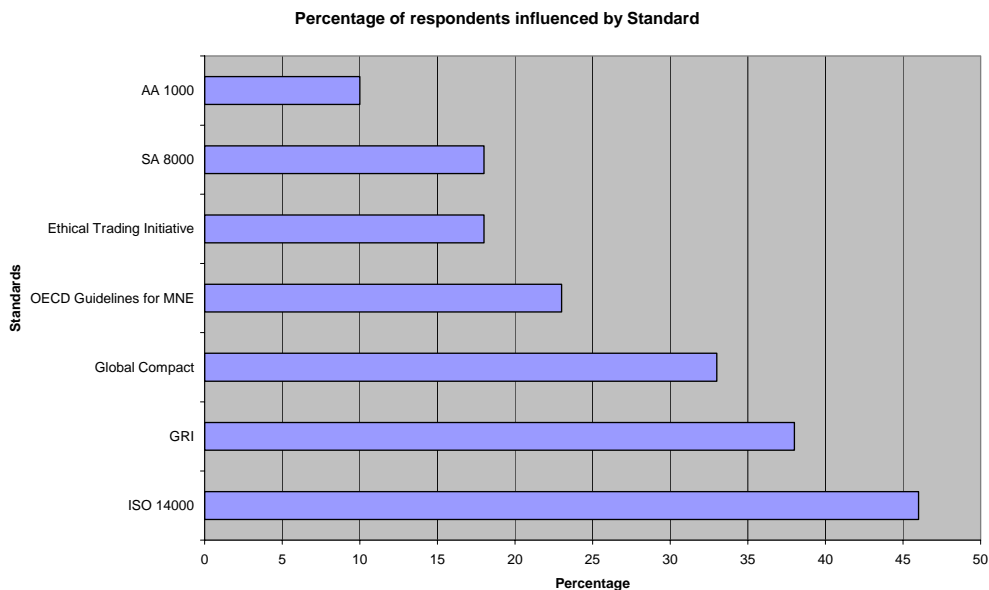


Figure 9-7: Influence of International Standards or Guidelines on Businesses [A53]

However, the study also looked at the number of years that a specific standard has influenced the business (see Figure 9-8). It is evident from this study that the influence of standards has increased in recent years, especially over the last 5 years. In addition it is interesting to note that environmental standards (e.g. ISO 14000) have influenced companies for far longer than more traditional social standards (e.g. SA 8000). Furthermore integrated sustainable development standards or guidelines (e.g. GRI) have only started to influence companies in the last 3 years.

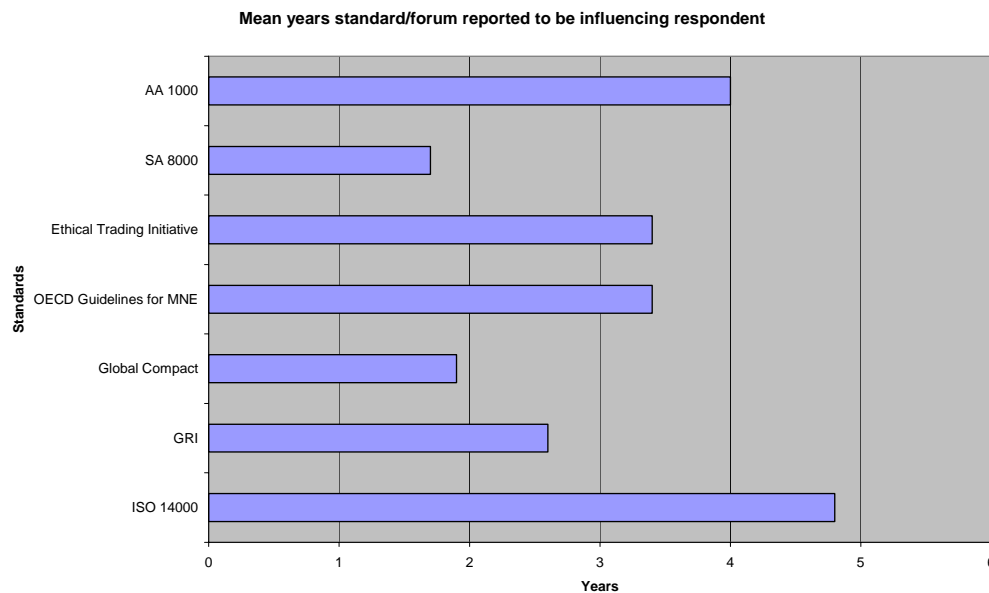


Figure 9-8: Mean years standard reported to be influencing respondent

It is concluded that the international guidelines and standards are definitely supporting the drive to force business to align their activities with the principles of sustainable development. Furthermore these guidelines and standards offer valuable information and processes to help businesses achieving the goal. However, no single guideline or standard are specifically aimed at projects. Furthermore although some provide criteria and in some instances indicators to measure progress none contains a clear framework that addresses all aspects of sustainable development. There is thus a distinct difference between sustainable development frameworks, and international guidelines or standards that may be directly or indirectly focused on sustainable development.

In addition, although most of the guidelines and standards included specific aspects of the social dimension of sustainable development, the primary focus of these aspects is mostly on the internal social dimension (i.e. workforce) and on stakeholder engagement. The impact of the business on the external society is thus not really addressed by these guidelines and standards. Therefore it is concluded that although the international guidelines and standards are definitely drivers of business sustainability, it does not address all aspects of the social dimension of sustainable development.

9.2 Frameworks to assess or measure Sustainable Development

Frameworks to assess Sustainable Development can be viewed as a support driver for business sustainability. The origin of these frameworks can be traced back to the outcomes of the 1992 Earth Summit since chapter 40 of Agenda 21 calls on governments (at national level) and non-governmental organizations to develop indicators of sustainable development that can provide a solid basis for decision-making at all levels [A54]. Agenda 21 goes one step further to specifically call for the harmonization of indicator development efforts at the regional, national and global levels. The incorporation of these indicators into widely accessible reports and databases is also suggested.

Numerous efforts to develop sustainable development indicator frameworks have thus been undertaken. Most of these attempts have a strong community, regional or national focus [A55]. A few frameworks with a specific industry focus have also been proposed, although not all dimensions of sustainable development is addressed by these initiatives. Table 9-10 provides an overview of the initiatives to measure sustainability or aspects thereof.

Table 9-10: Overview of current practice in sustainable development measurement [A56]

	Economic Performance	Environmental Performance	Social Performance	Integrated sustainability
Number of initiatives	Accounting standards	Many	Few	Handful
Developmental stages	Mature	Moving towards standardisation	Infancy	Embryonic
Business penetration	Mainstream	Moving towards mainstream	Limited (niche)	Very limited
Public reporting	Mandatory	Mandatory and voluntary	Mostly voluntary	Voluntary
Linkages to other sustainability dimensions	None	Eco-efficiency	None	Multiple
Utility of information outside companies	Universal	Multiple	Narrow	Potentially large
Current focus	Company	Company, facility, product	Company, project	Company, product

These indicator frameworks are acting as support drivers to help businesses to align their practices with the principles of sustainable development. Five proposed frameworks are chosen as a representation of frameworks available for business and are reviewed in more detail.

The five frameworks are:

- United Nation's Commission on Sustainable Development's Indicator Framework
- Global Reporting Initiative (GRI)
- Sustainability Metrics of the Institution of Chemical Engineers
- Wuppertal Sustainability Indicators
- Azapagic & Perdan's Sustainable Development Indicators for Industry

9.2.1 United Nation's Commission on Sustainable Development's Indicators of Sustainable Development

The United Nation's Commission on Sustainable Development (CSD) started with a Work Programme on Indicators of Sustainable Development in 1995 [A57]. In 2000 a final report was published that describes the approach as well as the main themes and sub-themes together with suggested indicators. The indicators suggested by the commission have been tested in 22 countries covering all regions of the world.

The final framework has been derived from a driving force-state-response and all the indicators are organized under the four primary dimensions of sustainable development as defined by Agenda 21: social, environmental, economic and institutional. These four dimensions are dealt with by means of 15 themes and 38 sub-themes. Core indicators are suggested for the sub-themes and a methodology sheet for each indicator has been developed that provides the unit of measurement, policy relevance, methodological description, guidelines on assessment of data as well as the names of agencies involved with the development of the indicator. The main themes are shown in Figure 9-9.

The theme framework addresses the following considerations: future risks, correlation between themes, sustainability goals and basic societal needs. It is believed that the framework can be a proactive tool to assist decision-making [A58]. The framework has been used as a basis by numerous nations [A59]. The aspects addressed by the framework are not all relevant to the business community, and definitely not on an operational and project level. However, the framework provides insight into what sustainability entails on a national level, and clearly shows in which areas business can consider making a contribution.

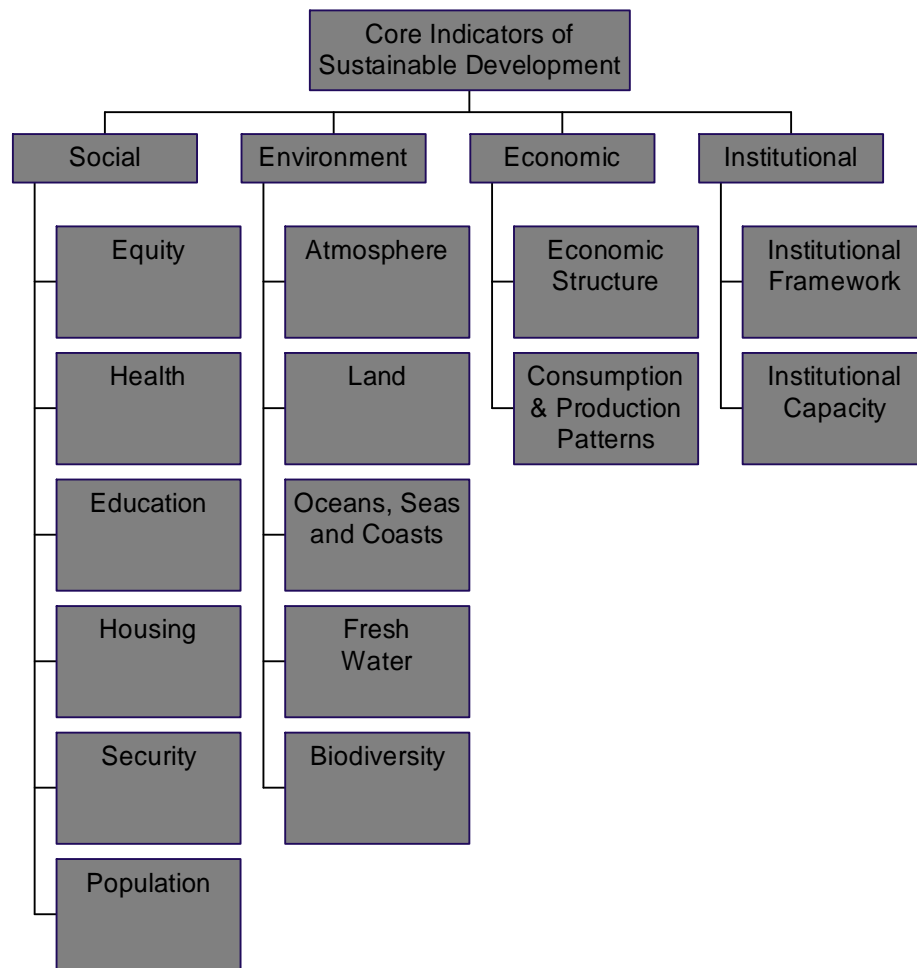


Figure 9-9: The United Nations CSD theme indicator framework

9.2.2 Global Reporting Initiative

In 1997 the Coalition for Environmentally Responsible Economies (CERES) (a United States of America NGO) and the United Nations Environment Programme launched the Global Reporting Initiative (GRI) with the goal of enhancing the quality, rigor and utility of sustainability reporting. The goal of the GRI is to develop a set of reporting guidelines with the aim of achieving worldwide consensus. These reporting guidelines consist of reporting principles, a generic content of a sustainability report and performance indicators. The performance indicators are structured according to a hierarchy of category, aspect and indicators and address the social, environmental and economic performance of a company (see Table 9.11). There are six categories in total, one for economic aspects, one for environmental aspects and four for social aspects. The GRI proposes both qualitative and quantitative indicators [A60].

Table 9-11: The Structure of the Global Reporting Initiative (GRI) Indicator Framework [A60]

	Category	Aspect
Economic	Direct Economic Impacts	Customers Suppliers Employees Providers of Capital Public Sector
Environmental	Environmental	Materials Energy Water Biodiversity Emissions, effluents, and waste Suppliers Products and services Compliance Transport Overall
Social	Labour Practices and Decent Work	Employment Labour/Management relations Health & Safety Training & Education Diversity & Opportunity
	Human Rights	Strategy & Management Non-discrimination Freedom of association & collective bargaining Child Labour Forced & Compulsory labour Disciplinary Practices Security Practices Indigenous Rights
	Society	Community Bribery & Corruption Political Contributions Competition & Pricing
	Product Responsibility	Customer Health& Safety Products & Services Advertising Respect for Privacy

The guideline contains more than 100 indicators. However, not all the indicators are easy to evaluate and no guidance is given on how to choose between the indicators or how to calculate some of the suggested indicators [A61]. Other disadvantages of the framework are:

- Since no clear and operative definition of sustainability is provided, it lacks a direction in which business should be moving [A62].
- The guidelines are extremely time-consuming since it requires extensive descriptive information.
- The focus of the GRI guidelines has been multinational companies and therefore the needs and capabilities of small and medium-sized companies and companies in developing countries are excluded [A61].
- The strong focus on reporting can steer companies away from the real issue of performance [A4]
- The weakness on social indicators [A4], since most are qualitative or descriptive information required and are thus not measuring performance.

The guideline does, however, indicate what should be considered at a lower level, i.e. operational or project level within the company, especially if the company reports on sustainability using the GRI principles. Furthermore, the GRI guidelines provides a common framework for companies to report their sustainability performance and thus makes it easier to compare sustainability reports as well as performance and enables external benchmarking [A61]. The GRI initiative held a series of roundtable across the globe during 2004 to discuss the guidelines and the future development thereof. Currently 366 companies in 32 countries worldwide use the GRI for sustainability reporting [A63]. In South Africa there are 19 companies that follow the GRI guidelines of which four are in the mining industry, six in the financial service industry and three in the process industry. Other companies are in food and beverage, energy supply, construction or water supply industries, or conglomerates [A64].

9.2.3 Azapagic & Perdan's Indicator Framework

Azapagic and Perdan [A65] proposed a general sustainable development framework for industry (see Table 9-12). The framework has a specific business focus and is based on sustainable development being defined as “*satisfying social, environmental and economic goals*” [A65]. It thus does not acknowledge the fourth dimension of sustainable development (i.e. institutional dimension) as defined by the United Nations CSD. The criteria that are proposed are very general and not all the indicators will be appropriate to all companies. Furthermore, specific indicators for different sectors or different business operations (e.g. projects) will have to be defined separately. The indicator framework does however provide definitions for all the proposed indicators and guidelines how to determine the indicator values.

The indicator framework has been used as a basis for the indicator framework developed by the IChem^E (see section 9.2.4) [A66].

Table 9-12: Indicators of Sustainable Development for Industry: a general framework [A65]

ENVIRONMENTAL INDICATORS	ECONOMIC INDICATORS	SOCIAL INDICATORS
<p><i>Environmental Impacts</i></p> <ul style="list-style-type: none"> • Resource Use • Global Warming • Ozone Depletion • Acidification • Eutrophication • Photochemical smog • Human Toxicity • Ecotoxicity • Solid Waste <p><i>Environmental Efficiency</i></p> <ul style="list-style-type: none"> • Material and energy intensity • Material Recyclability • Product Durability • Service Intensity <p><i>Voluntary Actions</i></p> <ul style="list-style-type: none"> • Environmental Management Systems (EMS) • Environmental improvements above the compliance levels • Assessment of suppliers 	<p><i>Financial Indicators</i></p> <ul style="list-style-type: none"> • Value Added • Contribution to GDP • Expenditure on environmental protection • Environmental Liabilities • Ethical Investments <p><i>Human-capital indicators</i></p> <ul style="list-style-type: none"> • Employment contribution • Staff turnover • Expenditure on health and safety • Investment in staff development 	<p><i>Ethics Indicators</i></p> <ul style="list-style-type: none"> • Preservation of cultural values <ul style="list-style-type: none"> ○ Stakeholder inclusion ○ Involvement in Community Projects • International standards of conduct <ul style="list-style-type: none"> ○ Business dealings ○ Child labour ○ Fair prices ○ Collaboration with corrupt regimes • Intergenerational equity <p><i>Welfare Indicators</i></p> <ul style="list-style-type: none"> • Income distribution • Work Satisfaction • Satisfaction of social needs

9.2.4 IChem^E Sustainability Metrics for the Process Industries

The Sustainable Development Workgroup of the Institution of Chemical Engineers (IChem^E) has developed sustainability metrics that can be used by the process industry to measure the sustainability performance of an operating unit. The triple bottom line approach is followed and it is recommended that companies use the metrics to set targets in order to monitor annual progress and to develop internal benchmarking standards [A67]. Sub-themes with indicators are proposed for economic, environmental as well as social impacts (see Figure 9-10). Standard evaluation forms and conversion tables are provided. The framework does not address the institutional dimension of sustainable development.

Interestingly, the economic indicators that address the internal economic stability and health of the company have a strong internal focus. This framework is less complex and impact oriented. However, the framework strongly favours environmental aspects, as well as quantifiable indicators that may not be practical in all operational practices, e.g. in the early phases of a project's life cycle. Statistics on the use of the framework is not available.

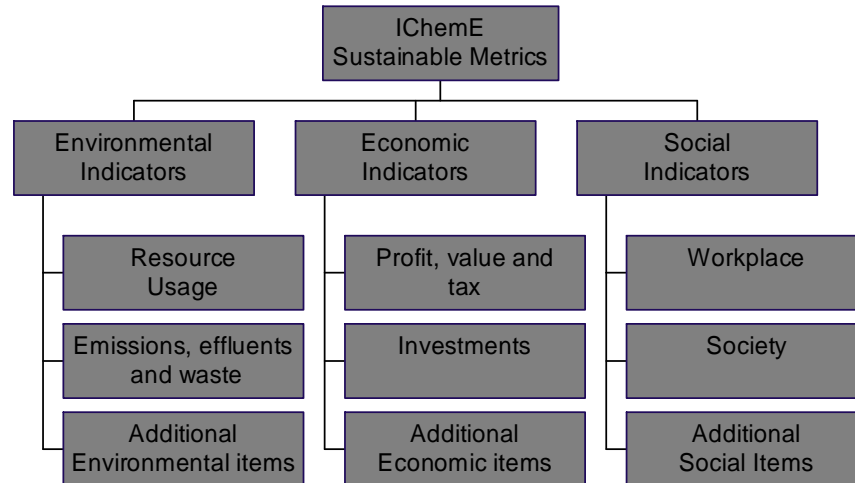


Figure 9-10: IChem^E sustainability metrics

9.2.5 Wuppertal Institute's Indicators of Sustainable Development

In 1998 the Wuppertal Institute published a working paper in which it discusses an approach to sustainable development indicators [A68]. The Wuppertal approach acknowledges the four dimensions of sustainable development as defined by the United Nations CSD. The approach also recognizes the importance of the interlinkages between these four dimensions and states that focusing exclusively on the four dimensions would carry the risk of losing the coherence of the approach [A68]. The goal of the Wuppertal approach is not to compromise between the different goals of the four dimensions of sustainable development but rather to search for integrated approaches and 'win-win' situations. The Wuppertal approach is graphically illustrated in Figure 9-11.

The indicator framework proposed is applicable both on a macro (national) and micro (business) level. The approach used for business social sustainability deserved more discussion. The United Nations Development Programme (UNDP) Human Development Index (HDI) has been adapted to form a Corporate Human Development Index (CHDI) that can be used to measure or assess social sustainable development aspects. The Corporate Human Development Index consists of three main components:

- Quality of Industrial Relations and Labour Conditions;
- Education: Input and Maintenance of Human Capital; and
- Income Level and Distribution.

It is proposed that, similar to the HDI, the CHDI can have various adjusted versions, amendments and refinements, e.g. a gender-adjusted CHDI [A69].

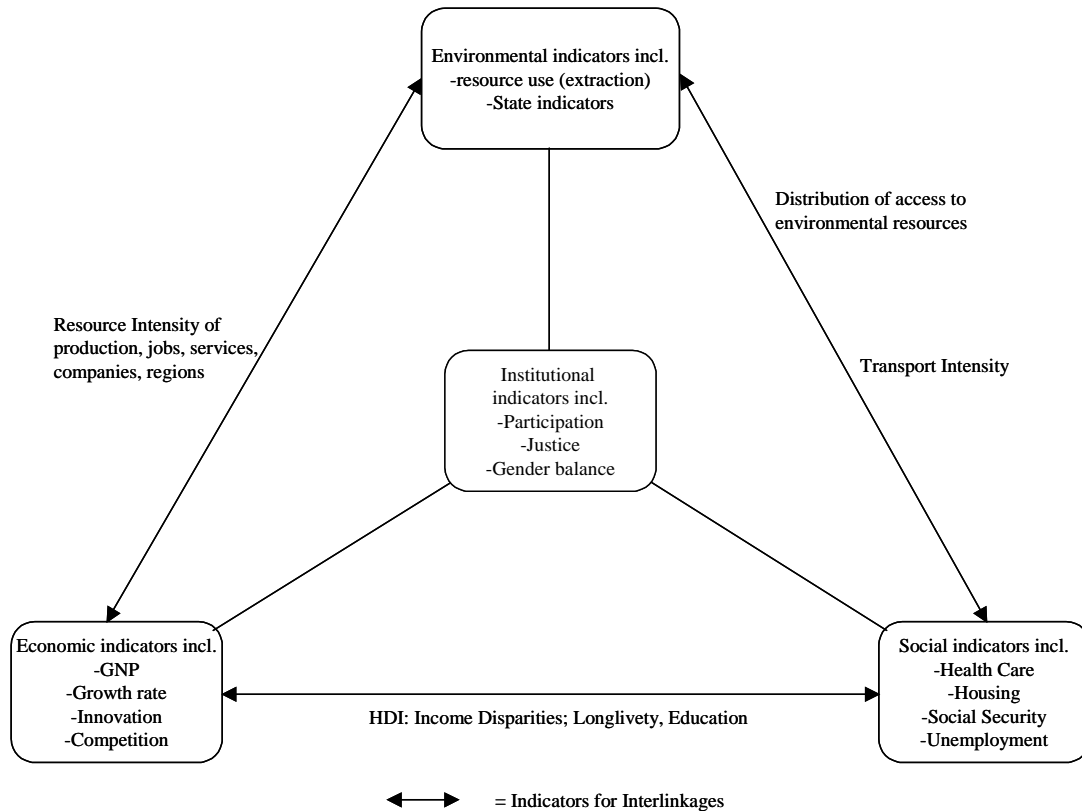


Figure 9-11: Sectoral and Interlinkage indicators as proposed by the Wuppertal Institute [A68]

At the time of the analysis the indicator framework has not been implemented in a business environment yet, although the European Aluminium Industry took parts of it for a CSR reporting scheme, which is under development [A70].

9.2.6 European Union's Conceptual Framework of Social Indicators

The new priority given to social reporting activities forced the European Union to look at the standards of social reporting within its boundaries. The Union realised in order to enhance European integration and cohesion to create a "Social Europe", appropriate knowledge and systematic information on the social conditions within and across European societies will be of crucial importance. It set out to develop a conceptual framework of social indicators. The approach to develop the framework focuses on:

- identify and specify the goal dimensions of the welfare development in Europe;
- based on the goal dimensions define measurement dimensions; and
- develop indicators for each measurement dimension [A71].

Six goal dimensions have been structured around three welfare concepts, namely:

- Quality of Life;

- Social Cohesion; and
- Sustainability [A71].

The six goal dimensions are:

- Improvement of Objective Living Conditions;
- Enhancement of Subjective Well-Being;
- Reduction of Disparities – Equal Opportunities – Social Exclusion;
- Strengthening Social Connections and Ties – Social Capital;
- Enhancement/Preservation of Human Capital; and
- Enhancement/Preservation of Natural Capital [A71].

Measurement dimensions have been defined around fourteen life domains. For each life domains the relevant goal dimensions have been listed and possible measurements to assess the goal dimension in the specific life domain are suggested. The fourteen life domains are:

- Population;
- Households and Families;
- Housing;
- Transport;
- Leisure, Media and Culture;
- Social and Political Participation and Integration;
- Education and Vocational Training;
- Labour Market and Working Conditions;
- Income, Standard of Living and Consumption Patterns;
- Health;
- Environment;
- Social Security;
- Public Safety and Crime; and
- Total Life Situation [A71].

Twenty European countries are participating and the results will be combined into results for the European Union which will be compared with indicators of highly industrial countries such as the United States of America and Japan [A71].

9.2.7 General comments on the frameworks

Although a framework to organise the indicators is essential, it must be realised that a framework by itself is not able to express the complexities and interrelationships encompassed by sustainable development. Furthermore, the needs and priorities of the users will to a large degree influence the choice of a framework and core set of indicators [A58]. It is evident that although the five frameworks

that have been discussed provide a basis to work from, not one of the frameworks can directly be applied to projects. In addition the four frameworks applicable to industry clearly support the view that far less work has been done on the social dimension of business sustainability [A33].

9.3 Corporate Social Responsibility: Indicators, Measurements, Standards and Models.

9.3.1 Ethos Corporate Social Responsibility Indicators

The Ethos Institute for Business and Social Responsibility launched the first edition of the Ethos Corporate Social Responsibility Indicators in 2000 (the second edition of the indicators was launched in June 2001). The indicators can be used as a tool to support the monitoring and management of social responsibility practices of a company. The institute views social responsibility as more than only social actions developed by the company in a community, and states that stakeholder dialogue and stakeholder interaction are core elements of corporate social responsibility. [A72].

The Ethos Indicators are divided into 7 themes, namely: Values & Transparency, Workplace, Environment, Suppliers, Consumers or Customers, Community and Government and society. Each theme is divided into sub-themes (see Figure 9-12) and questions are asked to determine the performance or progress made with the specific aspect. The questionnaire methods that are used to determine indicator values for each sub-theme are: binary responses (yes/no); Numerical responses (percentage values, etc.) and evaluation scales. Companies can voluntarily complete the indicator questionnaire and send it back to the institute, which will then send personalized reports of the analysis of the results. In April 2001, 71 companies have completed the questionnaire of which most have more than 500 employees and are trading in Brasilia [A72].

The framework addresses two dimensions of sustainability, namely the social and environmental dimension from a business perspective. It thus view business environmental sustainable performance as a corporate responsibility. Furthermore the framework acknowledges that the social dimension has an internal (workplace) as well as external (broader society) focus. The idea of taking responsibility further into the supply chain is promoted by having suppliers as a main theme. Nevertheless, due to the specific use thereof, the framework cannot be classified as an international framework yet.

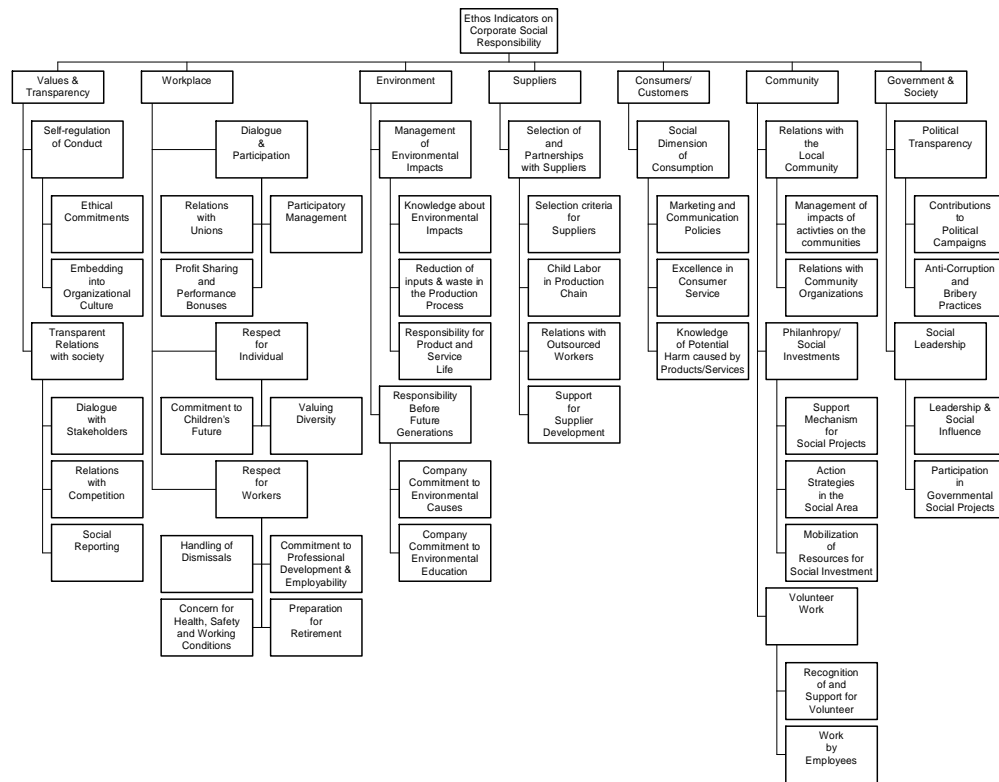


Figure 9-12: Ethos Corporate Social Responsibility Indicator Framework

9.3.2 Standards of Corporate Social Responsibility of the Social Venture Network

In 1987 a group of business and social entrepreneurs created *Social Venture Networks*, since they shared the belief that business can be a potent force for solving social problems. Social Venture Networks has become a forum where members debate, demonstrate and evaluate the practices, rationales and consequences of corporate social responsibility. The group started working on a set of standards for corporate social responsibility in 1995 since it is believed that social responsibility is a dynamic process concerned with good behaviour, which is the result of making decisions balancing the interests of all affected people. Furthermore, it is stated that there is not a generic prescription to be socially responsible since there is no such thing as a generic company [A73]. In 1999 a set of nine standards were published, the nine standards are:

- Ethics
- Accountability
- Governance
- Financial Returns
- Employment Practices
- Business Relationships
- Products and Services

- Community Involvement
- Environmental Protection

For each standard the following information is provided:

- Principle – a brief value statement.
- Practices – examples of how a company can improve performance relative to the standard.
- Measures – examples of qualitative, quantitative and monetary indicators that can be used to measure performance relative to the standard.
- Resources – a list of potential sources of additional information, tools, techniques or organisations that can assist a company in improving performance relative to the standard [A73].

The standards acknowledge six stakeholder groups, namely: investors, employees, business partners, customers, community and the environment. It thus addresses three dimensions of sustainable development, i.e. economic, social and environmental. Furthermore, it supports concepts such as product stewardship and greening the supply chain, while emphasising the importance of stakeholder dialogue. The standards act as a guideline document which companies can use to measure and improve their corporate social responsibility.

9.3.3 The Danish Ministry of Social Affairs' Social Index

In 2000 the Danish Ministry of Social Affairs published the *Social Index*, a tool, which can be used to determine the degree to which a company lives up to its social responsibilities. The tool was developed in collaboration with KPMG and the Socialforskningsinstituttet and it has been tested by a large group of public and private companies. The Social Index has four applications:

- Management tool – assist in formulating and evaluating social objectives and measures.
- Communication tool – inform stakeholders of social actions.
- Training tool - creating social awareness in the workforce by using the tool.
- Comparison tool – can compare results to previous results or use tool to benchmark company against other companies [A74].

The outcome of the tool is a social index value between 0 and 100 and the value can be interpreted on a scale provided. The social index is determined by evaluating the worksheets, which the company must complete. The worksheets consist of three sections, which each consist out of a set of statements, twenty-four statements in total. Each statement is evaluated by listing actions, which must be evaluated against a scale ranging from “*not at all*” to “*nearly always*” and then determining an average score for the statement. The statements have weights assigned to them and a weighted score is determined for each section. The sections also have weights assigned to them, which is then used to determine the social index [A74]. The sections and statements together with their weights are listed in Table 9-13.

Table 9-13: Social Index dimensions and statements [A74]

Description	Weighting
What we want	0.20
1. Top Management is committed to the company assuming social responsibility	0.30
2. Top Management sets aside resources for implementing social responsibility	0.30
3. The company is committed to demonstrating its social responsibility to the outside world	0.20
4. The company has an overview of the possibilities for assuming social responsibility both internally and externally	0.20
What we do	0.50
5. The company assumes social responsibility when recruiting	0.10
6. The company takes social account of the family and leisure interests of its workforce	0.10
7. The company takes social aspects into account in changes and fluctuations in demand	0.05
8. The company takes social consideration into account in dismissals	0.05
9. The company holds on to workers at risk of exclusion from the labour market	0.10
10. The company takes social considerations into account when workers are sick	0.10
11. The company takes social considerations into account when workers retire from the labour market	0.05
12. The company prevents work-related injuries, poor health and resulting subsequent social exclusion from the labour market	0.10
13. The company trains and develops its workers to prevent later social exclusion from the labour market	0.10
14. The company participates in local social partnerships	0.05
15. The company is open to society	0.05
16. The company is open to society (B)	0.05
17. The company requires its subsidiaries, suppliers and clients to assume social responsibility	0.10
What we get	0.30
18. Quantitative indicators show that the company's efforts yield desired results	0.20
19. Qualitative indicators show that the company's efforts yield desired results	0.20
20. Social responsibility is integrated throughout the company	0.20
21. Workers are satisfied with the company's handling of social responsibility	0.10
22. The local community is satisfied with the company's handling of social responsibility	0.10
23. Customers and suppliers are satisfied with the company's handling of social responsibility	0.10
24. In general, the company handle its social responsibility well	0.10

9.3.4 Corporate Social Performance Model

Corporate Social Performance is concerned with a company's performance with regards to its responsibility towards society. Wood [A75] defined corporate social performance as "*a business organisation's configuration of principles of social responsibility, processes of social responsiveness, and policies, programmes and observable outcomes as they relate to the firm's societal relationships*". Wartick and Cochran first proposed a model for Corporate Social Performance in 1985 [A76]. The model was adapted by Wood in 1991 [A75] and refined by Wood and Wartick in 1998 [A77]. The refined model is shown in Figure 9-13. The model consists three elements namely:

- Principles of Corporate Social Responsibility
- Processes of Corporate Social Responsiveness
- Outcomes of Corporate Behaviour

The principles state the basic values that motivate companies to respond to social pressures, i.e. why should a company be socially responsive? The processes show what companies are to do in order to be socially responsive, while the outcomes show the result of the actions of social responsiveness. The model thus shows companies why they should take action with regards to corporate social responsibility, what they should do, and what the outcomes of their actions must be.

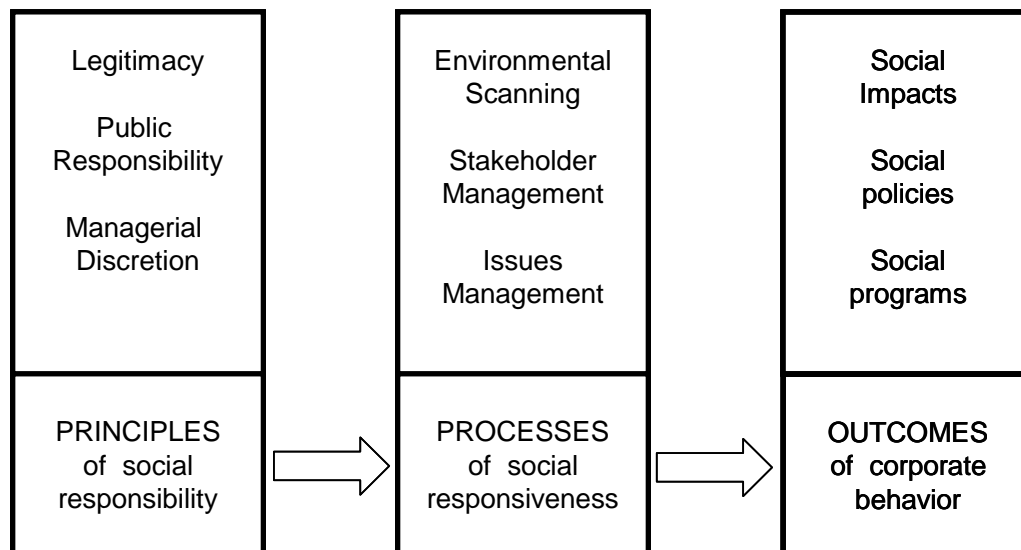


Figure 9-13: Corporate Social Performance (CSP) Model [A77]

The CSP Model mainly addresses the social dimension of sustainability, although the environmental dimension is mentioned in the process block. The model does not include any indicators or measurements to measure progress with regards to social performance, but merely aims to improve the understanding of corporate social performance by stating what the necessary processes and outcomes for it is. Hopkins [A78] identified this shortcoming of the model and defined indicators and ways to

measure the indicators for all aspects of each element. In order to do so, the outcomes have been refined as internal stakeholder effects and external stakeholder effects (see Table 9-14).

Table 9-14: Indicators and Measures for the CSP Model [A78]

Elements of CSP Model	Indicator	
Level 1: Principles of Social Responsibility		
Legitimacy	<ul style="list-style-type: none"> - Code of Ethics Published - Code of Ethics distributed to employees 	
Public Responsibility	<ul style="list-style-type: none"> - Litigation involving corporate lawbreaking - Fines resulting from illegal activities - Contribution to innovation - Job creation 	
Managerial Discretion	<ul style="list-style-type: none"> - Training in Code of Ethics to managers and employees - Managers convicted of illegal activities 	
Level 2: Processes of Social Responsiveness		
Environmental Scanning	<ul style="list-style-type: none"> - Mechanism to review social issues relevant to firm 	
Stakeholder Management	<ul style="list-style-type: none"> - Existence of an analytical body for social issues as integral part of policy making - Existence of Social audits - Existence of Ethical accounting statements 	
Issue Management	<ul style="list-style-type: none"> - Policies made on basis of analysis of social issues 	
Level 3: Outcomes of Corporate Behaviour		
	Stakeholder Groups	Indicator
Internal Stakeholder Effects	Owners	<ul style="list-style-type: none"> - Profitability/value - Corporate irresponsibility or illegal activity - Community welfare - Corporate philanthropy - Code of Ethics
	Managers	<ul style="list-style-type: none"> - Code of Ethics
	Employees	<ul style="list-style-type: none"> - Union/staff relations - Safety Issues - Pay, Pensions and benefits - Layoffs - Employee ownership - Women and minority policies
External Stakeholder Effects	Customers/Consumers	<ul style="list-style-type: none"> - Product Recalls - Litigation - Public product or service controversy - False advertising

Table 9-14: Indicators and Measures for the CSP Model [A78] (continues)

	Natural Environment	<ul style="list-style-type: none"> - Toxic Waste - Recycling and use of recycled products - Use of eco-label on products
	Community	<ul style="list-style-type: none"> - Corporate giving to community programmes - Direct involvement in community programmes - Community controversy or litigation
	Suppliers	<ul style="list-style-type: none"> - Firm's code of ethics - Supplier's code of ethics - Litigation/fines - Public controversy

9.4 Socially Responsible Investment

Socially Responsible Investment (SRI) started as a fringe interest for small investors with strong views on the environment and human rights [A79]. However, SRI has come a long way in the past 20 years and has especially grown in popularity in the last decade, specifically in countries in Europe, Australia and South Africa, while the uptake in the United States has been considerably less [A80]. For example, in the United Kingdom SRI already accounts for 5% of all funds invested [A81]. Nevertheless, an exact definition of Socially Responsible Investment, recently also referred to as “sustainable investment”, does not exist [A79]. The main difference between SRI and normal investment is that in SRI companies must meet specific social and environmental criteria prior to investment. These criteria differ between investors and investment firms. For example, some investors want to avoid companies manufacturing weapons, tobacco or alcohol, while others want to avoid companies that excessively damage the environment. The more radical approach is to search for companies that are breaking new ground in social and environmental performance and to invest in those [A79]. Social investors (i.e. investors that support SRI) use three basic tools to assist them, namely: social and environmental screening, shareholder advocacy and community investing [A82].

A European survey carried out at the end of 2001 revealed a high degree of confidence in SRI. The survey covered nine European states and involved 197 fund managers and 195 financial analysts. The respondents were asked what the issues are that are taken into account when recommending or selecting investments for a social investor or socially responsible fund [A83]. The top seven criteria are shown in Figure 9-14.

Criteria	Percentage of respondents who consider criteria
Respect for Human Rights	86%
Good corporate governance	85%
Communications and transparency on social practices	85%
Environmental Policy	85%
Quality of consumer relations	76%
Work conditions and atmosphere	73%
Trading policy/policy for employees' employability	68%

Figure 9-14: Criteria considered by SRI fund managers and analysts [A83]

There are currently three indexes in the world that measures only SRI companies, these are:

- Dow Jones Sustainability Index
- FTSE4Good Index
- JSE SRI Index [A84].

The requirements of these three indexes together with the requirements of the the *Domini 400 Social Index*SM are discussed in more detail.

9.4.1 Dow Jones Sustainability Indexes

The Dow Jones Indexes and SAM Sustainability group launched the Dow Jones Sustainability Group Index (DJSGI) in September 1999. This was the first global sustainability equity index. The DJSGI consists of the top 10% of companies with regards to sustainability performance in each of the 64 industry groups in the Dow Jones Global Index. The DJSGI has grown into a family of regional and specialized indexes. The regional indexes are: DJSGI World Index, DJSGI Europe index, DJSGI North America index, DJSGI Asia Pacific Index, DJSGI USA Index. The specialized indexes are: DJSGI excluding Alcohol indexes, DJSGI excluding gambling indexes, DJSGI excluding Tobacco indexes, DJSGI excluding Alcohol, Gambling and Tobacco indexes. The regional indexes are subsets of the DJSGI World Index, while the specialized indexes are derived from the relevant regional index and are thus subsets of the regional indexes [A85].

The sustainability performances of companies are determined by using the Corporate Sustainability Assessment methodology of SAM research, which is based on the application of general - and industry specific criteria to assess opportunities and risks deriving from economic, environmental and social dimensions. The criteria quantify the sustainability performance of a company by assigning a corporate sustainability score to the performance. The criteria and the relevant weights of each are shown in Table 9-15 [A86].

Table 9-15: SAM Corporate Sustainability Assessment Criteria [A86]

Dimension	Criteria	Weighting (%)
Economic	Codes of Conduct / Compliance / Corruption & Bribery	3
	Corporate Governance	5.4
	Customer Relationship Management	3
	Financial Robustness *	3.6
	Investor Relations	2.4
	Risk & Crisis Management	3.6
	Scorecards / Measurement Systems	4.2
	Strategic Planning	5.4
	Industry Specific Criteria	Depends on industry
Environment	Environmental Policy / Management	3
	Environmental Performance	4.2
	Environmental Reporting *	1.8
	Industry Specific Criteria	Depends on industry
Social	Corporate Citizenship / Philanthropy	2.4
	Stakeholder Engagement	4.2
	Labour Practice Indicators	3
	Human Capital Development	1.8
	Knowledge Management / Organisational Learning	3
	Social Reporting *	1.8
	Talent Attraction & Retention	2.4
	Standards for Suppliers	1.8
	Industry Specific Criteria	Depends on industry
Industry Specific Criteria		40

* Criteria assessed based on publicly available information only

The following sources of information are used to determine criteria values:

- Questionnaires completed by the company;
- Company Documents;
- Internet/ Other publicly available information;
- Media and Stakeholder analysis; and
- Personal contact with the companies [A86].

The questionnaire changes regularly and consists of three dimensions: Environmental, Economic and Social. The 2003 general questionnaire consisted of 73 questions of which 28 addressed the economic

dimension, 18 the environmental dimension and 27 the social dimension. The social dimension has been further analysed (see Table 9-16) [A87].

Table 9-16: Analysis of Social Dimension of 2003 SAM Questionnaire [A87]

Section	Number of Questions
1. Labour Practice Indicators	3
2. Human Capital Development	5
3. Talent Attraction & Retention	10
4. Knowledge Management/ Organisational Learning	3
5. Standards for Suppliers	1
6. Stakeholder Engagement	2
7. Corporate Citizenship / Philanthropy	3

The credibility of the assessment method has been criticised due to the fact that mostly qualitative information provided by the companies are used for rating purposes [A88]. Furthermore the assessment criteria do not make use of quantitative data on the generation of emissions or consumption of resources and lacks a life cycle perspective [A89]. Although it has been claimed that the DJSGI has outperformed the DJGI, research has found evidence that suggests that there are other factors, unrelated to sustainability, that could have caused this superior market performance [A88]. Nevertheless, the DJSGI remains an important tool to illuminate world-wide sustainability driven processes.

9.4.2 FTSE4Good Index

The FTSE4Good Index was officially launched in July 2001 with the following three key objectives:

- to provide a tool for socially responsible investors to identify and invest in companies that meet globally recognised corporate responsibility standards;
- to provide asset managers with a socially responsible investment benchmark and a tool for socially responsible investment products; and
- to contribute to the development of responsible business practices around the world [A90].

There are currently four FTSE4Good Indexes namely: FTSE4Good Global, FTSE4Good UK, FTSE4Good Europe and FTSE4Good US. In order for a company to qualify for a FTSE4Good Index it must first of all be in either the FTSE-All Share Index (UK) or the FTSE All-World Developed Index (Global). The company must further meet criteria requirements with regards to the following three areas: Environmental Sustainability, Social Sustainability and Stakeholder Relationships and lastly Human Rights (See Figure 9-15 for more detail on the sub criteria).

The evaluation of the environmental criteria distinguishes between three types of industry sectors: high impact, medium impact and low impact sectors. Companies are assigned a weighting based on their

industry sector. There are also currently three sets of Human Rights criteria, the first for the global resource sector, the second for companies operating in countries of concern and the third for all other companies. The list of countries of concern is updated regularly. FTSE is planning to add a fourth criterion, namely labour standards in the supply chain, and are refining the human rights criteria and indicators [A90].

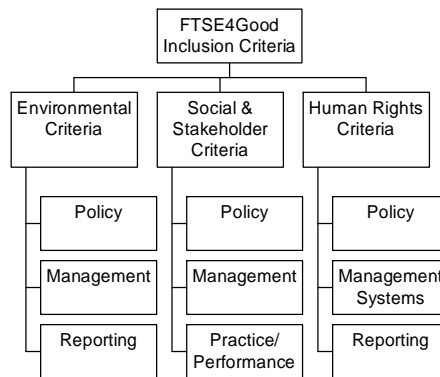


Figure 9-15: Criteria and Sub-Criteria of the FTSE4Good Evaluation Process

Companies with business interests in the following industries are excluded from the FTSE4Good Index:

- Tobacco Producers
- Companies manufacturing either parts or whole nuclear weapon systems
- Companies manufacturing whole weapon systems
- Owners or operators of nuclear power stations
- Companies involved in the extraction or processing of uranium [A90].

9.4.3 JSE SRI Index

The JSE will be launching its SRI Index in early 2004. The JSE together with FTSE have formed a FTSE/JSE SRI Advisory Committee with the task of developing a SRI Index for South Africa [A91]. The JSE SRI Index will comprise of companies listed on the FTSE/JSE All Share Index that choose to participate and that meet the selection criteria as set out in the final SRI Index Philosophy and Criteria documentation [A92].

The main intentions with the SRI Index are to:

- identify best practice in CSR;
- highlight companies with good CSR;
- measure these companies' share performance; and
- assist in meeting the complex needs of SRI [A91].

The criteria document is based primarily upon the FTSE4Good Criteria but has been updated to reflect the complex social problems facing South Africa. A draft version of the document was published in October 2003 followed by extensive stakeholder consultation [A93]. The criteria are based on three core principles, namely:

- Environmental Sustainability;
- Positive relationships with stakeholders; and
- Upholding and supporting universal human rights [A91].

Specific indicators have been developed for four main aspects namely: Corporate Governance, Environment, Economy and Society. The environmental criteria also distinguish between high impact, medium impact and low impact industries, similar to the FTSE4Good Criteria [A94]. For the first round of the SRI index, companies, that want to be considered, will have to complete questionnaires, which will then be analysed. The questionnaires will address the three pillars of sustainability namely: environmental, social and economic sustainability. Companies that meet the minimum score for each pillar will be considered and listed companies will be reviewed annually [A92]. The questionnaire is analysed in Table 9-17 [A95].

Table 9-17: Analysis of JSE SRI Questionnaire [A95]

Section	Number of Questions
Economic Questions	37
<i>1 Policies</i>	<i>6</i>
<i>2 Governance & Management</i>	<i>3</i>
<i>3 Ownership of the Company</i>	<i>3</i>
<i>4. Salaries and Remuneration</i>	<i>2</i>
<i>5. Knowledge Management</i>	<i>1</i>
<i>6. Human Resources</i>	<i>1</i>
<i>7. Contractors</i>	<i>1</i>
<i>8. Reporting, Auditing and Accounting</i>	<i>9</i>
<i>9. Insurance and Contingency Plans</i>	<i>2</i>
<i>10. Customers and Products</i>	<i>5</i>
<i>11. Compliance</i>	<i>4</i>

Table 9-17: Analysis of JSE SRI Questionnaire [A95] (continues)

Environmental Questions	65
<i>1. Policy</i>	5
<i>2. Management & Governance</i>	3
<i>3. Impact Assessments</i>	2
<i>4. Environmental Management Systems</i>	9
<i>5. Biodiversity, Natural Resources & GMOs</i>	10
<i>6. Emissions and Discharges</i>	3
<i>7. Energy</i>	3
<i>8. Waste</i>	4
<i>9. Water</i>	7
<i>10. Accidents and Incidents</i>	1
<i>11. Auditing, Accounting and Reporting</i>	6
<i>12. Human Resources</i>	2
<i>13. Contractors</i>	3
<i>14. Compliance</i>	4
<i>15. Standards and Certification</i>	2
<i>16. Awards</i>	1
Social Questions	59
<i>1. Policies</i>	6
<i>2. Management & Governance</i>	3
<i>3. Human Resources</i>	14
<i>4. Black Economic Empowerment</i>	4
<i>5. Health & Safety</i>	6
<i>6. HIV/AIDS and other chronic occupational diseases</i>	3
<i>7. Human Rights</i>	3
<i>8. Contractors</i>	3
<i>9. Auditing, Accounting and Reporting</i>	7
<i>10. Community Relations</i>	4
<i>11. Corporate Social Investment</i>	5
<i>12. Awards</i>	1

The main difference between the JSE SRI and the FTSE4Good and other SRI indexes or funds is that it does not automatically exclude companies in industries that some investors consider as unethical (e.g. tobacco or gambling) [A84].

9.4.4 Domini 400 Social Index SM

In 1989 Amy Domini, Peter Kinder and Steve Lydenberg started to develop the *Domini 400 Social Index* SM, which is an index of 400 primarily large-capitalisation United States corporations selected based on a wide range of social and environmental criteria. The index was officially launched in 1990, the first index of its kind and in 1991 the *Domini Social Equity Fund* SM was launched to provide a fund which can tracks the index. After 10 years this fund has proven that screening firms based on environmental and social criteria do not limit investment performance, to the contrary it may lead to higher returns on investment [A82]. The *Domini 400 Social Index* SM has been created to for the following four reasons

- to answer the question whether social screening carries an inherent financial “cost”;
- to provide a socially screened equity benchmark;
- to communicate the standards of mainstream social investors to corporations and the general public in a viable form; and
- to provide the basis for a screened, indexed investment vehicle for investors.

The Index excludes any company that meets any of the following requirements:

- derives two percent or more of its profit of the sales from military weapons systems;
- derives any revenue from the manufacture of alcoholic or tobacco products;
- derives any revenue from the providing of gambling products or services; and/or
- owns interests in nuclear power plants or derives electricity from nuclear power plants in which it has an interest.

Until November 1993 any company that held equity interests in South Africa was also excluded by the index [A96]. Companies are evaluated according to performance in a set of areas of concern. These areas and important aspects in each area (criteria and sub criteria) are shown in Figure 9-16 [A97]. Once a company is included in the index it can be removed if it is involved in a controversy in one of the areas of concern and it is evident that it is a long-term concern or of major proportions. Historically no more than two companies have been removed for social reasons per year. The policy is not to add the company back to the index for at least two years. The Index is maintained at 400 companies at all times, and a company only gets added if another company is removed [A96].

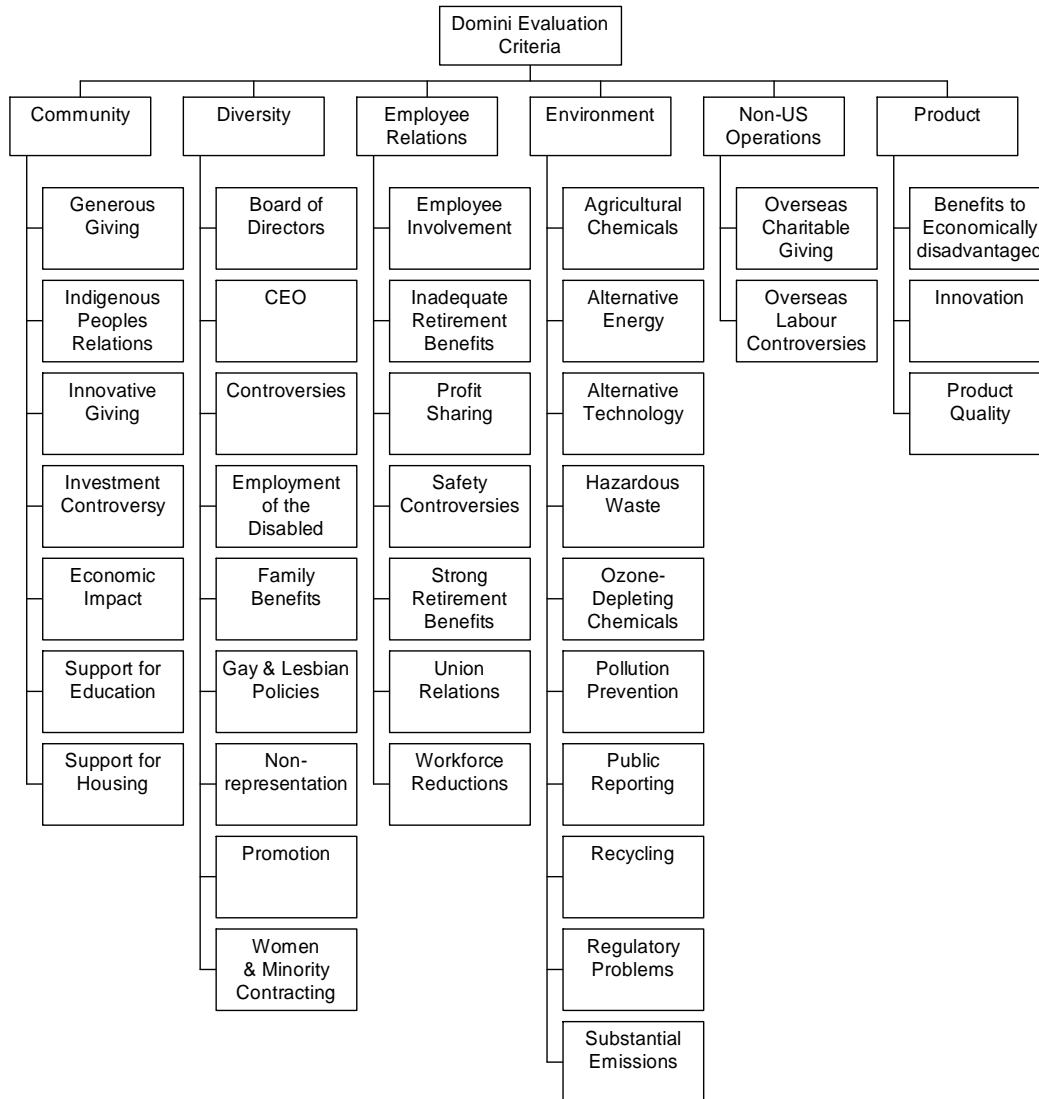


Figure 9-16: Criteria and Sub-Criteria of the Domini Index Screening Process

9.5 International Financing Corporations

The Equator Principles and Guidelines of the World Bank are discussed.

9.5.1 The Equator Principles

The International Finance Corporation (IFC), which is the private sector arm of the World Bank Group, convened a meeting of banks in London in October 2002 to discuss environmental and social issues in project finance [A98]. At this meeting the banks realised the significant opportunities their role as financiers offered them to promote responsible environmental stewardship and socially responsible development. It was decided to develop a banking industry framework that could address all environmental and social risks in project financing, this led to the Equator Principles.

The Equator Principles consist of five parts, namely: a preamble, statement of principles, Exhibit I: Environmental and Social Screening Process, Exhibit II: Safeguard Policies and Exhibit III: World Bank and IFC Specific Guidelines [A99]. The principles only apply to projects that cost US\$50 million or more and banks can adopt these principles, which means that an individual bank declares that its internal policies and processes are consistent with the Equator Principles. In 2002 there were 20 banks that have adopted the principles. These banks represent 74% of the 2002 project loan market and operate in over 100 countries [A100]. In 2005 the number of banks have increased to 28 [A101]. This means that these banks will use common terminology in categorizing projects into high, medium and low environmental and social risks. It is believed that the Equator Principles together with all the policies and guidelines (Exhibit II and III) will provide safeguards for investors and communities and that it will protect the project sponsors (any bank or international financing company) as well as the IFC from unnecessary financial and reputational risks [A102]. Adopting the Equator Principles has certain advantages for banks as well as for their customers, these are summarised in Table 9-18.

Table 9-18: Advantages of Adopting the Equator Principles [A100]

Advantages for Customers	Advantages for Banks
<ul style="list-style-type: none"> • Commonality of approach among banks saves sponsors the burden of producing different environmental assessments for different banks and from trying to meet different standards among banks • Implementing transactions more quickly by getting it right the first time • Having more certainty in project implementation • Having a more secure, long-term investment • Gaining reputational advantage 	<ul style="list-style-type: none"> • Using common terminology in assessing environmental and social issues • Using a common framework for implementation and documentation • Increasing productivity through reduced transaction time (getting it right the first time) • Having more certainty in closing project financings • Having a safer project loan • Gaining reputational advantage

In 2003 the IFC published a framework that can be used for the analysis of environmental, social and corporate governance performance of individual projects sponsored. The framework consists of 8 factors, categorised into three broad areas. These are:

- Management Commitment and Governance
 - Factor 1: Environmental Management, social development commitment and capacity
 - Factor 2: Corporate Governance
 - Factor 3: Accountability and transparency
- Environment
 - Factor 4: Eco-efficiency and environmental footprint
 - Factor 5: Environmental performance of products and services

- Socioeconomic Development
 - Factor 6: Local economic growth and partnerships
 - Factor 7: Community Development
 - Factor 8: Health, safety and welfare of the labour force [A102].

The framework measures performance not by binary yes or no answers but by using an evaluation scale that consists of four performance levels, these are:

- Level 1: Compliance with IFC's required standards where they exist
- Level 2: Indication of the creation of local or global environmental, social or corporate governance value
- Level 3: Signifies that a project's positive impact influences the behaviour of other companies and thus creates a farther-reaching demonstration impact
- Level 4: Describes a leadership position in which a project or company has a wide influence in driving best practices in industry and even beyond [A102].

Thus in order to get financing for projects or new developments, companies will be forced by the financing agents to adhere to a minimum set of sustainable development standards. In addition the IFC has also published guidelines to assist with public consultation [A103], community development [A104], resettlement [A105] and other sustainable development related issues.

9.5.2 World Bank

The World Bank has been institutionalizing some type of social analysis in its investment operations since 1984. Currently about 50% of bank operations undergo one or other form of social analysis [A106]. For investment projects two types of social analyses are performed namely:

- Project Social Analysis: The bank undertakes this sociological appraisal study to determine opportunities, constraints and likely impacts of the proposed project in order to examine whether the project's likely social development outcomes have been clearly identified and to ensure that the project is socially sustainable. It is thus a study to determine whether the support of the World Bank is justified. This can consist of an upstream social analysis and a sociological appraisal as part of the project process.
- Social Assessment: The borrower undertakes this study in order to
 - Identify the social dimensions of the project and possible social investment projects;
 - Provide spaces to incorporate stakeholders' views into project design; and
 - Establish a participatory process for implementation, monitoring and evaluation [A106].

More details on these two approaches together with information on the Bank's project supervision role is shown in Table 9-19.

The World Bank uses a common framework for social analysis based on five entry points:

- Social Diversity and gender;
- Institutions, rules and behaviour;
- Stakeholders;
- Participation; and
- Social Risk [A107]

These entry points are dimensions of inquiry to structure work and it helps project planners to understand how the pieces of the social puzzle fit together.

Table 9-19: Approaches to Social Analysis in World Bank Operations [107]

Instrument	Description	Context	Uses	Role
Upstream social analysis	Country-wide, sector-wide or issue-based analytical work.	Either as stand-alone ESW or integrated PA, CEA, COA or sectoral ESW	Input into CAS, PRSP, or sector-wide programs.	Bank
Sociological appraisal as part of the project appraisal process	Appraisal of social dimensions of projects.	Draws on information available from upstream social analysis and related ESW, prior project documentation, external data and studies and social assessments undertaken for the project.	To examine opportunities, constraints and likely impacts to determine whether the project is socially sustainable so as to justify Bank support for the project.	Bank. If information from prior studies is insufficient or if the project is contentious, the Bank may be recommend that the Borrower undertake a social assessment.
Project Supervision	Supervision of social aspects of the project.	Supervision missions, review of project reports and ongoing stakeholder consultations.	Feedback and adaptation during implementation.	Bank

Table 9-19: Approaches to Social Analysis in World Bank Operations [107] (continues)

Social Assessment	A method that uses a mix of qualitative and quantitative tools to determine the likely social impacts of a project on stakeholders – and the likely effect of stakeholders on the project.	As participatory research during project preparation, and as an on-going process to enable involvement of beneficiaries and affected persons during implementation.	To take account of the views and preferences of affected people and other stakeholders so as to improve design of a project, and to establish a participatory process for project implementation and monitoring.	Borrower. The Bank clears the terms of reference and reviews the findings of any social assessment carried out during preparation.
-------------------	--	---	--	--

9.6 References

- [A1] Kell, G., *The global compact: origins, operations, progress and challenges*, The Journal of Corporate Citizenship, Autumn 2003, pp. 35-49.
- [A2] Global Compact. *The Global Compact Homepage*, <http://www.unglobalcompact.org> visited on 26 December 2003.
- [A3] Global Compact Office, *How the Global Compact Works*, United Nations Global Compact Office, New York, 2003. Available from: <http://www.unglobalcompact.org> visited on 26 December 2003.
- [A4] Henriques, A., & Raynard, P., *Social Sustainability Research Theme: Part 2 – Appendices*, The Sigma Project Publication, 2001. Available from: http://www.projectsigma.com/RnDStreams/4_social.asp visited on 1 January 2004.
- [A5] Turner, M., *UN group to measure companies' social virtues*, Financial Times, 3 March 2004, pp. 10.
- [A6] McKinsey & Company, *Assessing the Global Compact's Impact*, McKinsey & Company Report, 11 May 2004.
- [A7] Global Sullivan Principles, *Leon Sullivan*, http://www.globalsullivanprinciples.org/new_page_4.htm visited on 27 December 2003.
- [A8] Gordon, K., *The OECD Guidelines and Other Corporate Responsibility Instruments: A Comparison*, OECD Working Papers on International Investment Number 2001/5, December 2001.
- [A9] Global Sullivan Principles, *The Principles*, <http://www.globalsullivanprinciples.org/principles.htm> visited on 27 December 2003.
- [A10] Global Sullivan Principles, *The Global Sullivan Principles of Social Responsibility*, <http://www.globalsullivanprinciples.org> visited on 27 December 2003.

- [A11] Global Sullivan Principles, *Implementation*,
<http://www.globalsullivanprinciples.org/implementation.htm> visited on 27 December 2003.
- [A12] Global Sullivan Principles, *Endorses List*,
http://www.globalsullivanprinciples.org/Endorser_list_Oct9.PDF visited on 27 December 2003.
- [A13] Organisation for Economic Co-Operation and Development, *The OECD Guidelines for Multinational Enterprises 2000 Revision*, OECD Publication, Paris, 2000.
- [A14] Organisation for Economic Co-Operation and Development, *OECD Homepage*,
<http://www.oecd.org> visited on 27 December 2003.
- [A15] Caux Round Table, *Caux Round Table Principles for Business, English Translation*,
<http://www.cauxroundtable.org/ENGLISH.htm> visited on 20 January 2003.
- [A16] Caux Round Table, *Caux Round Table Homepage*, <http://www.cauxroundtable.org> visited on 27 December 2003.
- [A17] Caux Round Table, *Introduction to Principles for Business*,
<http://www.cauxroundtable.org/principles.html> visited on 27 December 2003.
- [A18] Social Accountability International, *About Social Accountability International*,
<http://www.cepaa.org/AboutSAI/AboutSAI.htm> visited on 29 December 2003.
- [A19] Social Accountability Institute, *GUIDANCE 1999: Guidance Document for Social Accountability 8000 (SA8000®)*, Version 1999-I, SAI, New York, March 1999.
- [A20] Social Accountability International, *Overview of SA8000*,
<http://www.cepaa.org/SA8000/SA8000.htm> visited on 4 March 2003.
- [A21] Social Accountability International, *Certified Facilities*,
<http://www.cepaa.org/Accreditation/CertifiedFacilities.xls> visited on 29 December 2003.
- [A22] AccountAbility, *Overview of the AA1000 framework*, AccountAbility Publication, London, 1999. Available from:
<http://www.accountability.org.uk/uploadstore/cms/docs/AA1000%20Overview.pdf> visited on 29 December 2003.
- [A23] AccountAbility, *AA1000*, <http://www.accountability.org.uk/aa1000/default.asp> visited on 29 December 2003.
- [A24] AccountAbility, *AccountAbility 1000 (AA1000) framework: Standards, guidelines and professional qualification, Exposure draft – November 1999*, AccountAbility Publication, London, 1999. Available from:
<http://www.accountability.org.uk/uploadstore/cms/docs/AA1000%20Framework%201999.pdf> visited on 29 December 2003.
- [A25] AccountAbility, *AA1000 Series Uses and Users*, Available from:
<http://www.accountability.org.uk/aa1000/default.asp?pageid=122> visited on 29 December 2003.
- [A26] AccountAbility, *AA1000: Assurance Standard*, Available from:
<http://www.accountability.org.uk/aa1000/default.asp?pageid=52> visited on 29 December 2003.

-
- [A27] Investors in People UK, *Frequently Asked Questions*, Available from: <http://iipuk.co.uk/IIP/Internet/InvestorsinPeople/FrequentlyAskedQuestions/default.htm> visited on 29 December 2003.
- [A28] Investors in People UK, *The Standard*, Available from: <http://iipuk.co.uk/IIP/Internet/InvestorsinPeople/TheStandard/default.htm> visited on 29 December 2003.
- [A29] Ethical Trading Initiative, *Ethical Trading Initiative Homepage*, Available from: <http://www.ethicaltrade.org> visited on 29 December 2003.
- [A30] The Natural Step UK, *The Natural Step: Background*, Available from: http://www.naturalstep.org.uk/uk_homepage.html visited on 29 December 2003.
- [A31] The Natural Step, *Det Naturliga Steget*, Available from: <http://www.detnaturligasteget.se/DnsSwe/Start/Index.html> visited on 29 December 2003.
- [A32] Upham, P., *An Assessment of The Natural Step theory of sustainability*, Journal of Cleaner Production, Vol. 8, No. 6, 2000, pp 445-454.
- [A33] Visser, W., & Sunter, C., *Beyond Reasonable Greed: Why Sustainable Business is a Much Better Idea!*, Human & Rousseau, & Tafelberg, Cape Town, 2002
- [A34] Tibor, T., *ISO 14000: A guide to the New Environmental Management Standards*, IRWIN Professional Publishing, Chicago, 1996.
- [A35] Grace, N.O., Grace, D.M., Perez, A.L.& Maywah, N.A. *ISO 14001: A Road Map to Continuous Utility System Improvement*, Florida Water Resources Journal, October, 1999, pp. 24 –26, 28.
- [A36] Barrow, C.J., *Environmental and Social Impact Assessment: An Introduction*, Edward Arnold, London, 1997.
- [A37] Urban Environmental Management, *EMAS and Local Governments in Europe*, Available from: <http://www.gdrc.org/uem/iso14001/info-3.html> visited on 29 December 2003.
- [A38] ISO, *ISO Homepage*, Available from: <http://www.iso.ch> visited on 30 December 2003.
- [A39] ISO, *ISO 9000 & ISO 140000*, Available from: http://www.iso.ch/iso/en/iso9000-14000/basics/general/basics_1.html visited on 30 December 2003.
- [A40] ISO, *ISO 9000 – the basics*, Available from: http://www.iso.ch/iso/en/iso9000-14000/basics/basics9000/basics9000_1.html visited on 30 December 2003.
- [A41] ISO, *ISO 9000 Family of Standards*, Available from: http://www.iso.ch/iso/en/iso9000-14000/iso9000/selection_use/iso9000family.html visited on 30 December 2003.
- [A42] Napp, J., *E-STREAMS Vol. 6, No. 1 - January 2003*, Available from: http://www.e-streams.com/es0601/es0601_2252.htm visited on 20 April 2004.
- [A43] ISO, *ISO 14000 – the basics*, Available from: http://www.iso.ch/iso/en/iso9000-14000/basics/basics14000/basics14000_1.html visited on 30 December 2003.
- [A44] ISO, *ISO 9000 & 14000 in plain language*, Available from: http://www.iso.ch/iso/en/iso9000-14000/basics/general/basics_4.html visited on 30 December 2003.
- [A45] EFQM, *About EFQM*, Available from: http://www.efqm.org/human_resources/about.htm visited on 30 December 2003.

- [A46] EFQM, *EFQM Excellence Model*, Available from:
http://www.efqm.org/model_awards/model/excellence_model.htm visited on 30 December 2003.
- [A47] Malcolm Baldrige National Quality Program, *Malcolm Baldrige National Quality Program Homepage*, Available from: <http://www.baldrige.nist.gov> visited on 30 December 2003.
- [A48] Baldrige National Quality Program, *Criteria for Performance Excellence*, National Institute of Standards and Technology, Gaithersburg, 2004.
- [A49] Labuschagne, C., Personal Communication with South African Excellence Foundation, January 2004.
- [A50] South African Excellence Foundation, *About the South African Excellence Foundation*, Available from: <http://www.saef.co.za/asp/about> visited on 30 December 2003.
- [A51] South African Excellence Foundation, *The South African Excellence Model & Self-Assessment*, Available from: <http://www.saef.co.za/asp/assessment/default.asp> visited on 30 December 2003.
- [A52] South African Excellence Foundation, *Members*, Available from:
<http://www.saef.co.za/asp/membership> visited on 30 December 2003.
- [A53] Berman, J.E., & Webb, J., *Race To The Top: Attracting And Enabling Global Sustainable Business: Business Survey Report*, World Bank and International Finance Corporation, Washington, October 2003.
- [A54] United Nations Conference on Environment And Development, *Agenda 21*, United Nations Publication, 1992. Available from:
<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm> visited on 20 April 2004.
- [A55] Tyteca, D., *Sustainability Indicators at the Firm Level: Pollution and Resource Efficiency as a Necessary Condition towards Sustainability*, Journal of Industrial Ecology, Vol. 2, No. 4, 1999, pp. 61-77.
- [A56] Ranganathan, J., *Signs of Sustainability: Measuring Corporate Environmental and Social Performance*, In: Bennett, M. & James, P., (eds), *Sustainable Measures*, Greenleaf Publishing, Sheffield, 1999, pp 475-495.
- [A57] United Nations Commission on Sustainable Development, *Indicators of sustainable development: guidelines and methodologies*, United Nations, 2001. Available from
<http://www.un.org/esa/sustdev/natlinfo/indicators/indisd/indisd-mg2001.pdf>, visited on 19 November 2003.
- [A58] United Nations Department of Economic and Social Affairs *UN CSD Theme Framework and Indicators of Sustainability* . Final Draft, PriceWaterhouseCoopers for Division for Sustainable Development, November 18, 1999.
- [A59] Hass, J.L., Brunvoll, F, & Hoie, H., Overview of Sustainable Development Indicators used by National and International Agencies, OECD Statistics Working Paper 2002/1, Paris, 2002.
- [A60] Global Reporting Initiative, *Sustainability Reporting Guidelines 2002*, Global Reporting Initiative, Boston, 2002.

-
- [A61] Veleva, V., & Ellenbecker, M., *A Proposal for Measuring Business Sustainability – Addressing shortcomings of Existing Frameworks*, Greener Management International, Vol. 31, Autumn, 2000, pp. 101-120.
- [A62] Hawken, P., & Wackernagel, M., *Satisfying Lives for All within the Means of Nature: How a Honed GRI could advance true sustainability*, Available from:
<http://www.globalreporting.org/guidelines/archives/March99/commissioned/hawkenandwackernagel.pdf> visited on 23 December 2003.
- [A63] Global Reporting Initiative, *Global Reporting Initiative Homepage*, Available from:
<http://www.globalreporting.org> visited on 23 December 2003.
- [A64] Global Reporting Initiative, *GRI Reporting per Country*, Available from:
<http://www.globalreporting.org/guidelines/rep.country.asp> visited on 23 December 2003.
- [A65] Azapagic, A., & Perdan, S., *Indicators for Sustainable Development for Industry: A General Framework*, Trans IChemE, Vol. 78, Part B, July 2000, pp. 243-261.
- [A66] Labuschagne, C., Personal Communication with Dr. Adisa Azapagic, 25 March 2004.
- [A67] Institution of Chemical Engineers, *The Sustainability Metrics: Sustainable Development Progress Metrics recommend for use in the Process Industries*, Institution of Chemical Engineers, Rugby, 2002.
- [A68] Spangenberg, J.H., & Bonniot, O., *Sustainability Indicators – A Compass on the Road Towards Sustainability*, Wuppertal Paper No. 81, February 1998.
- [A69] Spangenberg, J.H., *Sustainability Management Indicators and the Corporate Human Development Index CHDI*, Seri Working Paper Series, Sustainable Europe Research Institute, Cologne, May 2000.
- [A70] Labuschagne, C., Personal Communication with Joachim Spangenberg, 21 January 2004.
- [A71] Centre for Survey Research and Methodology (ZUMA), *Conceptual Framework and Structure of a European System of Social Indicators*, EuReporting Working Paper no 9, Mannheim, 2000.
- [A72] Ethos Institute for Business and Social Responsibility, *ETHOS Corporate Social Responsibility INDICATORS*, Instituto Ethos de Empresas e Responsabilidade Social, São Paulo, 2001.
- [A73] Goodell, E. (editor), *Social Venture Networks: Standards of Corporate Social Responsibility*, Social Venture Networks, San Fransisco, 1999.
- [A74] Danish Ministry of Social Affairs, KPMG, & Socialforskningsinstituttet, *Social Index: Measuring a Company's social responsibility*, Danish Ministry of Social Affairs, Copenhagen, 2000.
- [A75] Wood, D.J., *Corporate Social Performance Revisited*, Academy of Management Review, Vol. 16, No.4, 1991, pp.691-718.
- [A76] Wood, D.J., *Social Issues in Management: Theory and Research in Corporate Social Performance*, Journal of Management, Vol. 17, No. 2, 1991, pp. 383-406.
- [A77] Wartick, S.L., & Wood, D.J., *International Business and Society*, Blackwell, Malden, MA, 1998
- [A78] Hopkins, M., *Defining Indicators to Access Socially Responsible Enterprises*, Futures, Vol. 29, No.7, 1997, pp. 581-603.

-
- [A79] Business and Sustainable Development, *Sustainable Investment*, Available from: http://www.bsdglobal.com/banking/sus_investment.asp visited on 20 January 2004.
- [A80] EC Newsdesk, *US not interested in CR and SRI says new report*, EC Newsdesk, 30 March 2004. Available from: <http://www.wbcds.org/plugins/DocSearch/details.asp?type=DocDet&DocId=4837> visited on 2 April 2004
- [A81] European Commission, *Promoting a European framework for corporate social responsibility – Green Paper*, Office for Official Publications of the European Communities, Luxembourg, 2001.
- [A82] Domini Social Investments, *The Domini Story*, Available from: <http://www.domini.com/about-domini/The-Domini-Story/Index.htm> visited on 31 December 2003.
- [A83] Business and Sustainable Development, *European Survey*, Available from: http://www.bsdglobal.com/banking/sus_survey.asp visited on 20 January 2004.
- [A84] Reed, J., *Johannesburg Stock Exchange: Appealing to socially responsible niche investors*, Financial Times, 6 October 2003.
- [A85] Knoepfel, I., *Dow Jones Sustainability Group Index: A Global Benchmark for Corporate Sustainability*, Corporate Environmental Strategy, Vol. 8, No. 1, 2001, pp. 6-15
- [A86] SAM Indexes, *Dow Jones Sustainability World Indexes Guide, Version 5.0*, SAM Indexes GmbH, Zollikon-Zurich, September 2003.
- [A87] SAM Research Inc., *Corporate Sustainability Assessment Questionnaire 2003: General Part*, SAM Research Inc, Zollikon-Zurich, 9 April 2003.
- [A88] Cerin, P., & Dobers, P., *Who is Rating the Raters?*, Corporate Environmental Strategy, Vol. 8, No. 2, 2001, pp. 95-97.
- [A89] Cerin, P., & Dobers, P., *What does the Performance of the Dow Jones Sustainability Group Index tell us?*, Eco-Management and Auditing, Vol. 8, 2001, pp. 123-133.
- [A90] FTSE, *FTSE4Good Index Series: Inclusion Criteria*, FTSE The Independent Global Index Company, London, 2003.
- [A91] Newton-King, N., & Le Roux, C., *Socially Responsible investment index to be launched in South Africa*, Sustainable Development International, No.8, 2003, pp. 59-60.
- [A92] Haase, C., *Socially Responsible Investment Index to become a critical financial indicator*, Engineering News, Vol. 23, No. 42, 2003, pp. 78-79.
- [A93] FTSE & JSE, *Launch of Draft FTSE/JSE SRI Index Philosophy and Criteria*, FTSE/JSE Press Release, 2 October 2003. Available from: http://ftse.jse.co.za/announcements/docs/sri_20021001.doc visited on 9 January 2004.
- [A94] JSE, *JSE SRI INDEX: Background and Selection Criteria*, Available from: <http://www.jse.co.za/sri/docs/Background%20and%20Criteria.final.06%2010%2003.pdf> visited on 9 January 2004.
- [A95] JSE Sustainability Research Intelligence, *JSE SRI INDEX: Questionnaire 17 October 2003*, Available from: <http://www.jse.co.za/sri/docs/Questionnaire.final.17%2010%2003.doc> visited on 9 January 2004.

- [A96] Domini Social Investments, *The Domini 400 Social IndexSM*, Available from: http://www.domini.com/Social-screening/creation_maintenance.doc_cvt.htm visited on 31 December 2003.
- [A97] Domini Social Investments, *Choosing our Investments*, Available from: <http://www.domini.com/Social-screening/index.htm> visited on 31 December 2003.
- [A98] The Equator Principles, *Frequently Asked Questions about the Equator Principles*, Available from: <http://www.equator-principles.com/faq.shtml> visited on 14 April 2004.
- [A99] Equator Principles, *The Equator Principles*, Available from: <http://www.equator-principles.com/principles.shtml> visited on 14 April 2004.
- [A100] Equator Principles, *Becoming an Adopting Bank*, Available from: <http://www.equator-principles.com/join.shtml> visited on 14 April 2004.
- [A101] Scott, M., *Project finance sparks change*, Financial Times, 21 March 2005. Available from: <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13761> visited on 30 March 2005.
- [A102] International Finance Corporation, *Measuring Sustainability: A Framework for Private Sector Investments*, IFC, Washington, 2003.
- [A103] IFC Environmental Division, *Doing Better Business Through Effective Public Consultation and Disclosure: A Good Practice Manual*, IFC.
- [A104] IFC Environmental Division, *Investing in People: Sustaining Communities through Improved Business Practice: A Community Development Resource Guide for Companies*, IFC.
- [A105] IFC, *Handbook for preparing a resettlement action plan*, IFC, 2001.
- [A106] World Bank, *Social Analysis at the Project Level*, Available from: <http://lnweb18.worldbank.org/ESSD/sdvext.nsf/61ByDocName/SocialAnalysis> visited on 14 April 2005.
- [A107] Social Analysis and Policy Team, *Social Analysis Sourcebook: Incorporating Social Dimensions into Bank-supported projects*, Washington DC, The World Bank: Social Development Department, 2003.

10. Appendix B: Universe as a Tripartite World

10.1 The Universe as a Tripartite World

The developed Cosmic Interdependence model, which is based on the holistic-reductionist-holistic approach, describes the universe in terms of four different cosmos: Economic Cosmos, Social Cosmos, Biotic Cosmos and Abiotic Cosmos [B1]. The four cosmos are interdependent (see Figure 10-1) and in the intersection areas of the four cosmos there are millions of combinations of conflict and harmony between the natural (abiotic and biotic) and human (social and economic) universe.

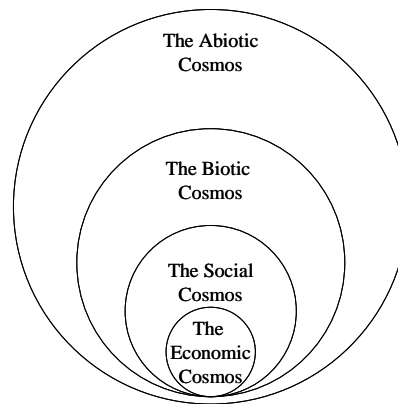


Figure 10-1: The Cosmic Interdependence [B1]

The human universe is often described as a “tripartite world” consisting of three pillars namely: business, civil society and government [B2]. The tripartite model is a novel perception of the human world. Up until the early 1990’s the human universe was mostly perceived as bipolar, consisting of two parts: government and non-government [B2]. The Institutional-Ideological Model depicts the way in which human activity is organized (see Figure 10-2) according to a tripartite approach. It places ecology (i.e. the natural universe) and technology in the centre since it represents the foundations of opportunities available to business-, government- and public institutions [B3]. The model distinguishes between the institutional and ideological component of each of the pillars of the tripartite world. The ideological component thus entails all ideas, values and beliefs that underlie collective activities while groups and organisations, i.e. the setting for these activities, are categorized under the institutional component. The range of the ideological component of each pillar is depicted in Figure 10-3.

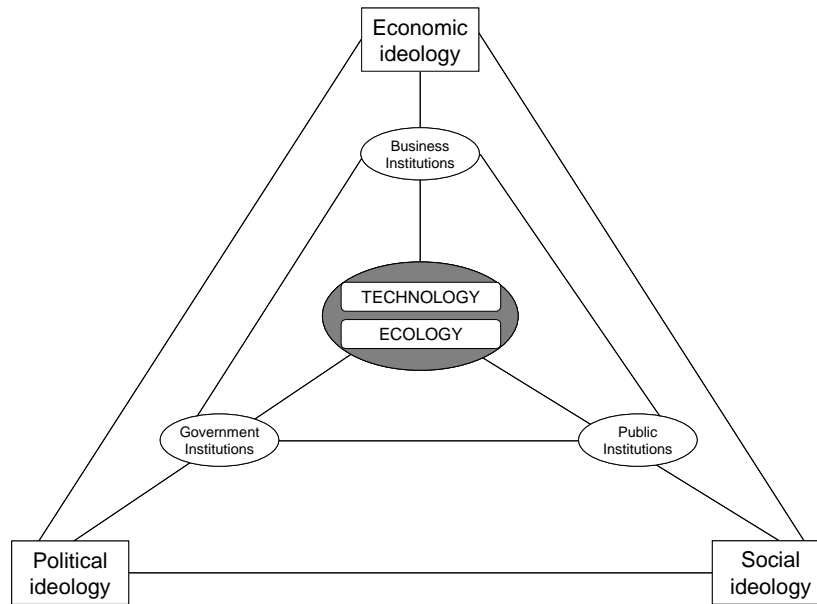


Figure 10-2: The Institutional-Ideological Model [B3]

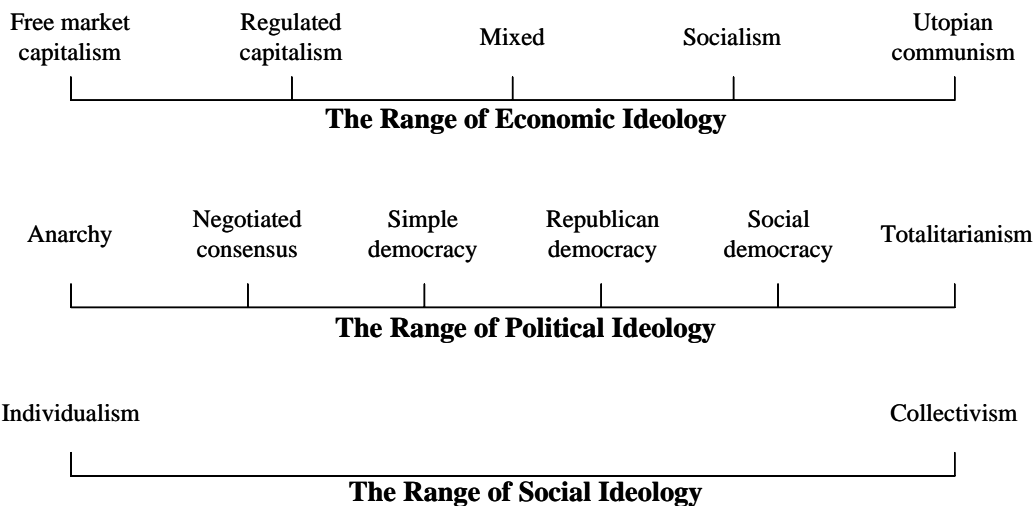


Figure 10-3: Range of Ideology [B3]

The major shortcoming of any tripartite-based model is the fact that it views business separate from civil society while civil society provides all the opportunities, innovation, wealth of progress and, most importantly, business’s licenses to exist, operate and sell [B2]. The interdependency and interrelations between the three pillars (i.e. business, civil society and government) and the strong reliance of all three pillars on the natural universe for existence [B4] is therefore underemphasized.

10.2 Business and its surrounding Environments

From the perspective of business, it operates in and interacts with an external environment. The business’s external environment can be defined as all surrounding conditions and forces that affect the business’s development and growth, but are typically beyond its control [B5]. The external environment of business has been analysed and classified in numerous ways.

Wilson [B6] views business as embedded in an environment consisting of four different sectors namely: social environment, economic environment, political environment and technological environment. However, Wilson’s model ignores the natural environmental aspects of the external environment. Since the 1987 Brundtland report and the 1992 Earth Summit the influence of ecology on business and of business on the natural universe has grown in importance [B7]. Wood [B8] thus adapted Wilson’s model by introducing an additional sector namely ecology or natural environment. The adapted model is often referred to as the SEPTEmber-model (see Figure 10-4) and classifies unique aspects of the external environment as separate sectors. The model also distinguishes between the business environment and the global business environment.

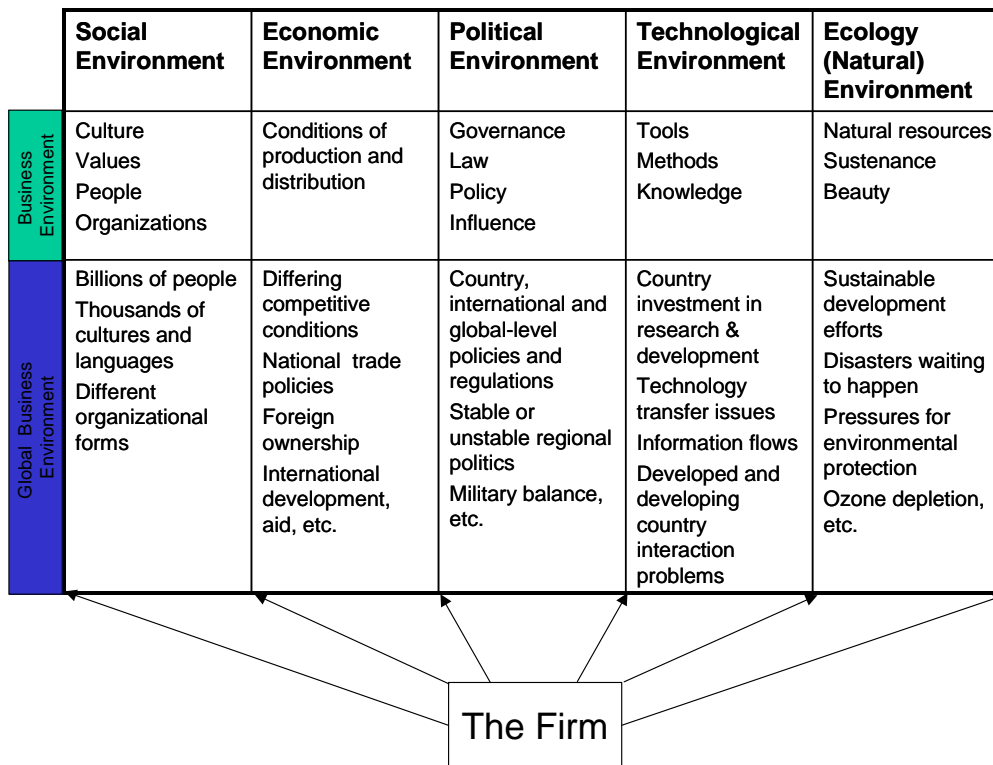


Figure 10-4: SEPTEmber model of the business environment [B8]

Nevertheless, the business and its external environment are intricately interconnected, i.e. events in one sector will have consequences for events and conditions in every other sector [B3]. Therefore, another

method of describing the external environment is to divide all external forces and role players into three interrelated subcategories based on the spatial scale of interaction between the business and the specific force or role player. These subcategories are Macro Environment, TASK environment and Industry [B5, B9]². These subcategories are illustrated in Figure 10-5. Business first of all operates in its own *internal* environment that can consist of different functional areas such as: marketing, finance, production, management, computer information systems, human resources, etc. It then forms part of a specific industry together with its competitors and the industry then competes in a more extended TASK environment, which includes the, suppliers, customers and other organizations with which the business directly interacts. The TASK environment is closer and more immediate than the macro environment, which describes the external environment at a more general level. The macro environment is often defined as the Political, Economical, Social and Technological Forces (PEST) [B9]. Nevertheless, events listed in the SEPTEmber model manifest at the TASK and Industry levels as well.

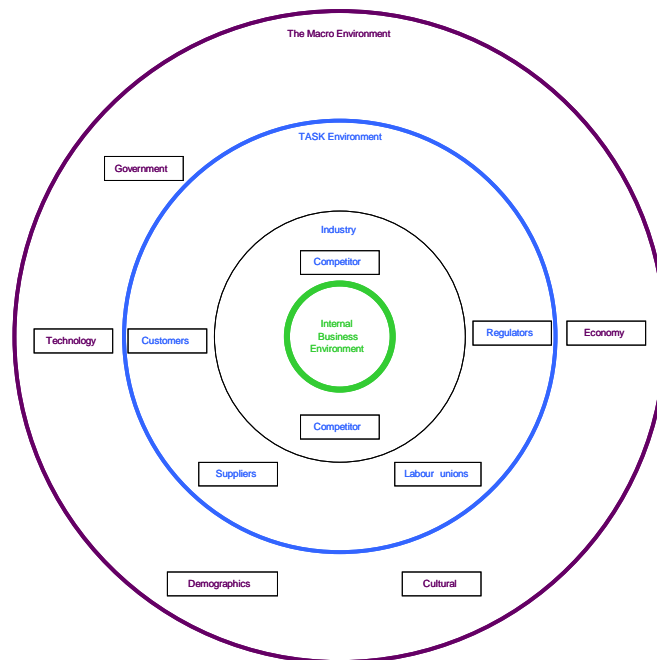


Figure 10-5: Business and the three spheres of the external environment (adapted from [B9])

These different models show the same forces or role players in the external environment from various perspectives (see Table 10-1) and do not contradict each other. The conclusion from the models is that business is not operating in a vacuum, but is rather part of an interdependent and interrelated universe. The traditional idea of business's isolation and independence thus does not hold true any longer [B3].

² Other terminology can also be used to refer to the subcategories for example the macro environment can be referred to as the remote environment and the TASK environment as the operating environment.

Business is not only influenced by its external environment but also influences and impacts on the external environment and must take responsibility for its actions [B10].

Table 10-1: Comparison of Models

Role player/ Force	Cosmos	IIM	SEPTEmber Model	Subcategory
Company	Economic and Social	Business Institution	Social Environment	Internal
Competitor	Economic	Business Institution	Social Environment	Industry
Customer	Social	Society – Public Institution	Social Environment	TASK
Supplier	Economic	Business Institution	Social Environment	TASK
Labour Unions	Economic and Social	Public Institution operates in Business Ideology	Social Environment	TASK
Regulators	Economic	Government Institution	Political Environment	TASK
Government	Social and Economic	Political Ideology	Political Environment	Macro
Technology	Economic and Social	Technology – Core of Model	Technological Environment	Macro
Economy	Economic	Economic Ideology	Economic Environment	Macro
Demographics	Social	Characteristic of Social Ideology	Social Environment	Macro
Cultural	Social	Characteristic of Social Ideology	Social Environment	Macro

10.3 References

[B1] Mebratu, D., *Sustainability as a Scientific Paradigm*, International Institute for Industrial Environmental Economics, Lund, 1996.

[B2] Holliday, C.O., Schmidheiny, S., & Watts, P., *Walking the Talk: The Business Case for Sustainable Development*, Greenleaf Publishing, Sheffield, 2002.

[B3] Wartick, S.L., & Wood, D.J., *International Business and Society*, Blackwell, Malden, MA, 1998.

[B4] Department for International Development: United Kingdom, Directorate General for Development: European Commission, United Nations Development Programme and The World Bank, *Linking Poverty Reduction and Environmental Management: Policy Challenges and Opportunities*, Publication for 2002 World Summit, July 2002.

- [B5] Pearce, J.A., & Robinson, R.B., *Formulation, Implementation and Control of Competitive Strategy*, Richard D. Irwin, Inc., Boston, 1991.
- [B6] Wilson, I.H., *Socio-political forecasting: A new dimension to strategic planning*. In: Carroll, A.B., (ed), *Managing Corporate Social Responsibility*, Little, Brown and Company (Inc.), Boston, 1977, pp 159-169.
- [B7] Rees, W.E., *A Role for Environmental Assessment in Achieving Sustainable Development*, Environmental Impact Assessment Review, Vol. 8, No.4, 1988, pp. 273-291.
- [B8] Wood, D.J., *Business and Society, 2nd Edition*, Harper Collins, New York, 1994.
- [B9] Bateman, T.S., & Zeithaml, C.P., *Management Function and Strategy*, Richard D. Irwin, Inc, Boston, 1990.
- [B10] World Resource Institute, United Nations Environment Programme & World Business Council for Sustainable Development, *Tomorrow's Markets: Global Trends and Their Implications for Business*, A WBCSD Publication, 2002

11. Appendix C: Corporate Response to Changing Expectations

11.1 Corporate Social Responsibility to Corporate Responsibility

Corporate Social Responsibility (CSR) is not a new concept to business, since business through the ages has demonstrated varying degrees of responsibility to society [C1]. The concept has been evolving for decades and as early as 1930 courses have been offered to educate the businessman in a new sense of social responsibility [C2]. However, the concept first generated broader interest in the 1960's in the United States [C3] as well as in the United Kingdom [C4] and then spread to Europe in the 1970's. Nevertheless, hardly any attention was paid to the concept for the next 15 years and it only re-emerged in the mid-1990's [C5]. Different driving forces behind the re-emerging of Corporate Social Responsibility has been identified [C6, C7] and are discussed in Table 11-1.

Table 11-1: Driving forces behind the re-emerging of CSR [C6, C7]

<p>1. Shrinking role of government:</p> <p>Due to shrinking government resources and a distrust of regulations, voluntary and non-regulatory initiatives have been explored. Furthermore, communities are looking at business to help solve problems governments used to address.</p>
<p>2. Personal ethics of individual entrepreneurs:</p> <p>The personal ethics of one individual within a company can drive the re-emerging of a CSR agenda, although this will not ensure sustainable operational commitment.</p>
<p>3. Supply chain pressures from Northern trading partners:</p> <p>International financing requirements and head offices (for reputation management purposes) are pressurising companies to adopt voluntary codes of conduct. Northern companies are also starting to pressure companies within their supply chains to adopt these voluntary codes of conducts (e.g. ETI, SA 8000).</p>
<p>4. Laws and regulations:</p> <p>Effectively enforced laws can drive companies to responsible behaviour, e.g. environmental laws that have resulted in drastic improvement of businesses' environmental performances.</p>
<p>5. Public relations and reputation assurance:</p> <p>Companies start viewing CSR as a strategic tool for promotion of reputation and brand value and thus the issue starts receiving more attention.</p>
<p>6. Shareholder activism and investor relations:</p> <p>Investors are increasingly demanding greater disclosure with regards to environmental and social issues. The growth in socially responsible investment is also pressurising companies to address CSR.</p>
<p>7. Social license to operate:</p> <p>The need to secure a "social license to operate" from society has become increasingly important. A prerequisite for business survival is society's approval of the way in which business conducts its operations. CSR definitely influence the way in which society regards business and must therefore be addressed.</p>

Table 11-1: Driving forces behind the re-emerging of CSR [C6, C7] (continues)

<p>8. Increased customer interest in social aspects</p> <p>Increased customer interest started with a “Green Consumer” outlook, which is now embracing social issues as well. It has been found that the ethical conduct of business exerts a growing influence on the purchasing decisions of customers.</p>
<p>9. Competitive Labour Market:</p> <p>Employees are increasingly looking beyond their salaries and benefits, and are seeking employers with whose operating practices and philosophies they can associate to. CSR are thus becoming an important prerequisite for ensuring that a company become or remains an employer of choice.</p>

Although the term “Corporate Social Responsibility” has been in use for more than forty years, there exist no universally accepted definition for the term [C1, C8, C9]. Table 11-2 contains various definitions for the term and in summary the following lists various views as to what the core meaning of social responsibility is:

- Profit making only [C10]
- Going beyond profit making (Davis as cited in [C11])
- Going beyond economic and legal requirements (McGuire as cited in [C2])
- Economic, legal and voluntary activities ([C1]; Mann as cited in [C2])
- Responsibility in a number of social problem areas ([C12]; [C9]; Eilbert & Parket, 1973 as cited in [C13]; [C14])
- Giving way to social responsiveness [C6, C15]

Table 11-2 Definitions of Corporate Social Responsibility

Corporate Social Responsibility is a broad strategic view of business’s vital roles and responsibilities in every society and in the global environment [C12]
The social responsibility of business is to increase its profits [C10]
Corporate Social Responsibility is the ethical behaviour of a company towards society, in particular this means the management acting responsibly in its relationships with all stakeholders who have a legitimate interest in the business [C1]
Corporate Social Responsibility supposes that the corporation has not only economic and legal obligations, but also certain responsibilities to society which extend beyond those obligations (McGuire as cited in [C2])
Corporate Social Responsibility is the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life [C9]
Corporate Social Responsibility is the firm’s consideration of, and response to, issues beyond the narrow economic, technical and legal requirements of the firm to accomplish social benefits along with the traditional economic gains which the firm seeks [Davis as cited in C11]

Table 11-2 Definitions of Corporate Social Responsibility (continues)

Corporate Social Responsibility refers to the commitment by business to an active role in the solution of broad social problems such as racial discrimination, pollution, transport and urban decay (Eilbert & Parket, 1973 as cited in [C13])
Corporate Social Responsibility is concerned with treating the stakeholders of a firm ethically or in a socially responsible manner [C14].
Corporate Social Responsibility implies bringing corporate behaviour up to a level where it is in congruence with currently, prevailing social norms, values and performance expectations [C15]
Corporate Social Responsibility is the concept that an enterprise is accountable for its impact on all relevant stakeholders. It is the continuing commitment by business to behave fairly and responsibly and contribute to economic development while improving the quality of life of the work force and their families as well as of the local community and society at large [C6]

It is concluded that the two main questions with regards to Corporate Social Responsibility are:

- What aspects or social concerns should business take responsibility for?
- Who are the stakeholders business are responsible to or what are the boundaries of corporate social responsibility?

Carroll [C16] attempted to answer the first question by suggesting that corporate social responsibility can be divided into four categories of responsibility and that these four categories should be depicted as a pyramid (see Figure 11-1).

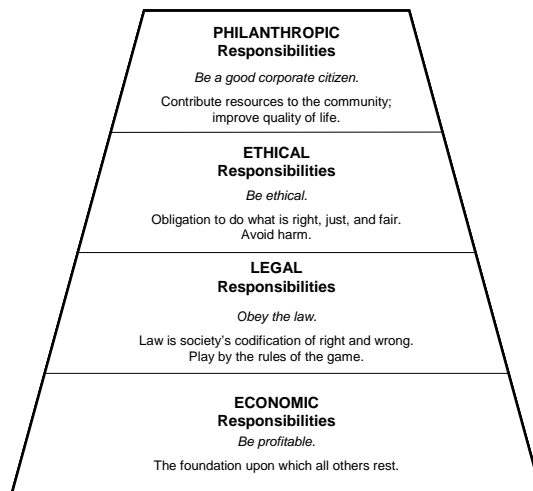


Figure 11-1: Pyramid of Corporate Social Responsibility [C16]

Although corporate social responsibility is often interpreted as philanthropy [C17], it is evident that it actually entails far more than just philanthropic contributions. For example, core business activities have a greater social impact than the philanthropic side of any business will ever have [C18]. The

Prince of Wales Institute [C19] acknowledges this fact when it states that corporate social responsibility should aim to make a positive contribution in the following three areas of influence:

- Core Business Activities by ensuring a responsible implementation thereof.
- Poverty-focused social investment and philanthropy programmes.
- Institution Building and public policy dialogues by getting involved.

However, companies normally progress through three stages when engaging with the concept of corporate social responsibility. These stages are:

- Stage 1: Pure Philanthropy: The company donates money or “in-kind” contributions to charities or civil society groups. In South Africa, this stage is referred to as ‘Corporate Social Investment’. The stage is associated with paternalistic behaviour by companies, i.e. companies think they know for what money is needed and start projects in communities without prior consultation with these communities.
- Stage 2: Corporate Social Responsibility: This stage still involves “donor-style” support to society, but businesses in this stage will engage in partnerships with society and would thus manage their corporate social investment as a business activity. Projects that are sponsored would thus be monitored and evaluated continuously and the long-term sustainability thereof when company support ends will be studied before hand.
- Stage 3: Corporate Citizenship: In this stage companies contribute to all three areas of influence by acknowledging the social and environmental dimensions of the full range of business functions and activities in the strategic management of the company and by continuing partnerships in the community [C6].

An organisation in stage 3 actually progressed from corporate social responsibility to corporate responsibility, which can be defined as “*the voluntary commitment by business to manage its activities in a responsible manner*” [C20]. Corporate Responsibility thus constitutes three different aspects, namely: corporate social responsibility, corporate financial responsibility and corporate environmental responsibility [C1].

In an attempt to determine the boundaries of corporate responsibility Amnesty International and the Prince of Wales Business Leader Forum depict the boundaries as nested circles of responsibility or spheres of influence (see Figure 11-2) [C21]. This approach takes the degree of corporate control over the sphere into consideration.

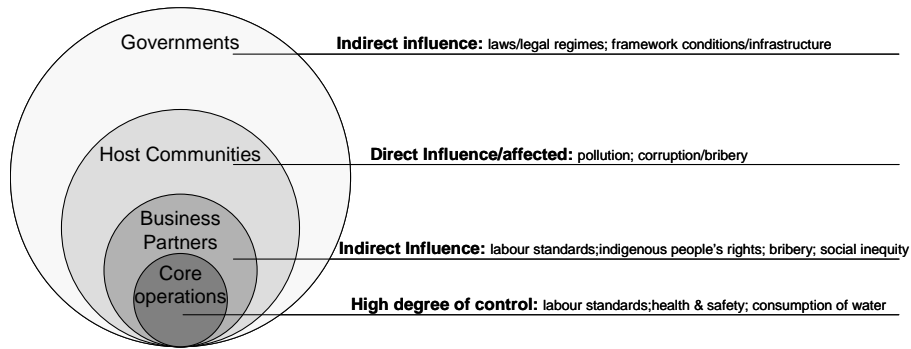


Figure 11-2: Spheres of Influence [adapted from C21]

The World Business Council for Sustainable Development states that in determining the boundaries of corporate responsibility the social issues or dilemmas along the value chain or product’s life cycle should be mapped to guide the company [C9]. Figure 11-3 shows an example of such a map.

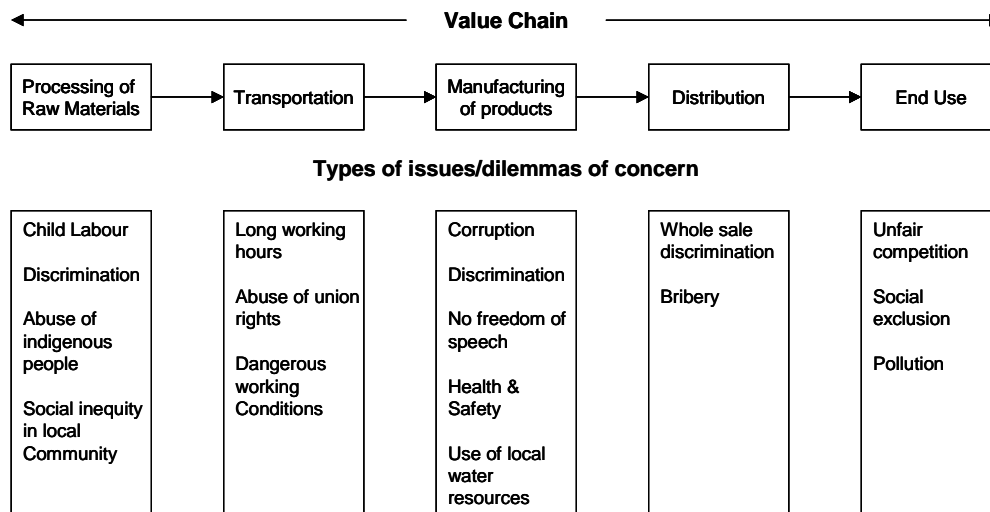


Figure 11-3: Social Issues in the Product’s life cycle [C9]

In conclusion the essence of corporate social responsibility is that business and society are interwoven and not distinct entities [C11] and business can only contribute fully to society if it is efficient, profitable and conduct its activities in a responsible manner, i.e. by taking the impacts and effects on the society and the environment into consideration (Sieff as cited in [C22]).

11.1.1 From Corporate Responsibility to Corporate Sustainability

Corporate Social Responsibility is accepted as an integral part of sustainable development, but exactly how the two terms fit together is debated vigorously [C1]. Hopkins [C23] views CSR and corporate

sustainability as two sides of the same coin, since CSR defines the social responsibilities of a business, which, if implemented, will lead to the business being sustainable. A business being sustainable and a business incorporating business sustainability is however not necessarily the same thing. A more accurate statement is that the acceptance of Corporate Social responsibility is a prerequisite for implementing the concept of business sustainability [C8], but it goes beyond corporate social responsibility. A company must first accept its corporate responsibility (Stage 3 of CSR, see section 11.1) before it can align itself with the principles of business sustainability, since business sustainability focuses on environmental, social and economic aspects. The company thus acknowledge corporate citizenship i.e. it is accountable to a wider group of stakeholders [C24] and should ask itself whether it is part of the solution to social and environmental problems or part of the problem [C25]. Corporate Citizenship is thus seen as the acceptance by business of its role in society and in the challenge of sustainable development and has three main focus areas namely:

- Basic business practices, values and policies
- Management of environmental and social issues within the product life cycle or value chain
- Voluntary contributions to community development [C24].

In conclusion the acceptance of Corporate Responsibility, i.e. up taking of corporate citizenship, is viewed as the first step of business sustainability. The principles of CSR, which are embedded in a broader corporate responsibility view, will thus manifest in and offers support to a business sustainability strategy.

11.2 Corporate or Business Sustainability

11.2.1 Sustainable Development as a concept

Humankind embraced the concept of sustainable development as the only path to future existence, mainly due to the fact that:

- the increased resource and energy demands of industrial activity lead to environmental decay; and in addition
- the population pressures and the division of resources resulted in sectors of the global population being deprived of basic human needs and security (e.g. food, shelter, health, education and family planning). This phenomenon is referred to as cycles of poverty [C26].

Business is also concerned with these two problems, due to the fact that declining ecosystems and failing societies will cause the failure of business in the twenty-first century [C27]. Furthermore, since the official conception of the term 'sustainable development' in 1987, the concept has shaped the political, economic and social environment in which all businesses operate [C28]. However, the concept of sustainable development is inherently vague [C29] and although it is understood intuitively it remains difficult to express in concrete, operational terms [C30]. In 1992 there were already more than 70 definitions for sustainable development [C31], but most agree that the concept comprises social, environmental and economic dimensions with equal importance [C32]. The World Bank [C33]

states that sustainable development can only be achieved when social, environmental and economic objectives or needs are balanced in decision-making. Figure 11-4 shows some of the aspects of each dimension.

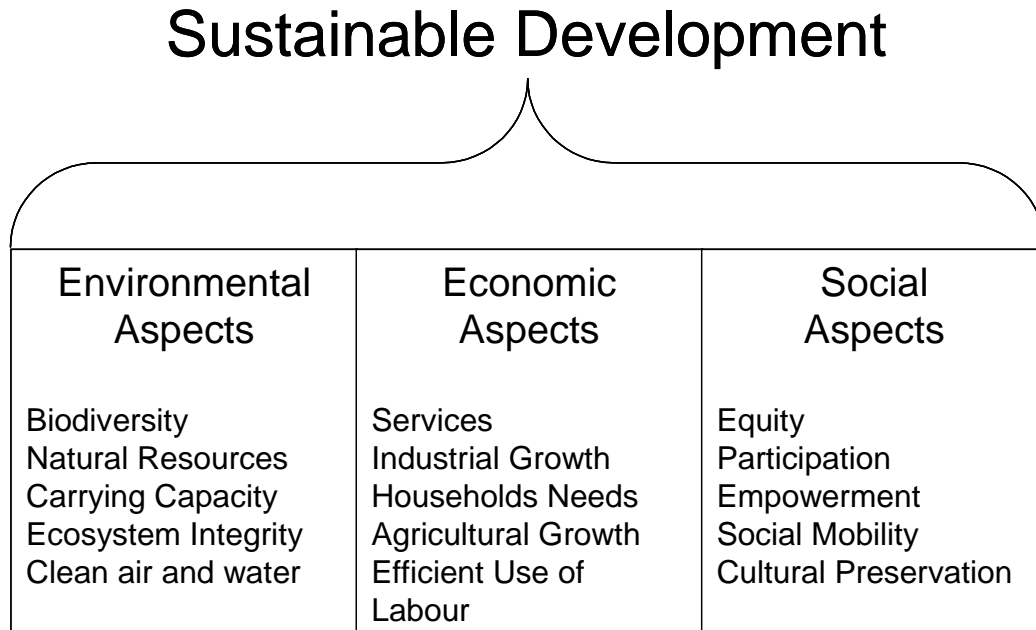


Figure 11-4: Sustainable Development Issues [C33]

Gardner [C34] identified eight principles for Sustainable Development and divided the principles into two categories: substantive and process-oriented (see Table 11-3).

Table 11-3: Principles of Sustainable Development [C34]

Substantive Principles	Process-Oriented Principles
a) Satisfaction of human needs.	a) Approaches to sustainable development should be goal seeking.
b) Maintenance of Ecological Integrity.	b) Analytical aspects of the approaches must be relational and systems-oriented.
c) Achievement of equity and social justice.	c) Strategies for sustainable development must be adaptive.
d) Provision for self-determination and cultural diversity	d) Organization for sustainable development should be interactive.

It is evident that there is consensus on the objectives and basic principles of sustainable development, but the details of how to achieve sustainable development or maintain sustainability are difficult to generalize as *“perceptions of and necessary actions for achieving sustainable development differ*

between social-cultural and political contexts and change over time”[C30]. This is especially true from the business perspective.

11.2.2 Business Sustainability

The focus of sustainable development implementation has recently shifted strongly towards business. Most managers have accepted that corporate or business sustainability is a prerequisite for staying in business [C5] and that business will have to play a more central role in efforts to achieve the goals of sustainable development [C35]

The International Institute for Sustainable Development (IISD) realised that the concept of sustainable development should be defined in terms that are familiar to the business community. This resulted in sustainable development for business (i.e. business sustainability) being defined as “*adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today, while protecting, sustaining and enhancing the human and natural resources that will be needed in the future*” [C36].

Knoepfel [C37] identified five key principles for corporate sustainability, namely:

- Innovation: Investing in innovations that will lead to a more efficient, effective and economic use of financial, social and natural resources over the long term.
- Governance: Establishing high standards of corporate governance, which include management quality and responsibility, organizational capability and corporate culture.
- Shareholders: Ensuring sound financial returns, long-term economic growth and productivity improvements and global competitiveness, which will meet the demands of shareholders.
- Leadership: Developing standards for best practice by which the industry can be lead to sustainability.
- Society: Securing a long-term license to operate by establishing long lasting social well being in local and global communities.

Businesses follow different strategic approaches to incorporate these principles of business sustainability. It is possible to distinguish between five strategic approaches, referred to as introverts, extroverts, bottom-liners, top-liners and transformers [C38]. Table 11-4 shows the differences between the five strategic approaches.

Table 11-4: A Range of Strategic Approaches to Sustainable Development [C38]

	Introverts	Extroverts	Bottom-Liners	Top-Liners	Transformers
Thrust	Stay with the pack	Take the high road	Cost leadership	Differentiation	Growth
Questions	Should I do anything?	How can I better align with stakeholders?	How can I get cost advantage?	How can I capitalize on sustainable development?	How can I leverage sustainable development to transform the organization?
Actions	Wait and see: track the issues	Strengthen communities and environmental protection	Improve eco-efficiency of processes	Create products and services with unique characteristics	Leverage sustainable development to better learn, innovate and manage for the future

11.3 References

- [C1] Watts, P., & Holme, R., *Corporate Social Responsibility: Meeting Changing Expectations*, World Business Council for Sustainable Development Publication, 1999. Available from: <http://www.wbcsd.org/DocRoot/Fc7YqesJY1mU6ilvhnSZ/CSRmeeting.pdf> visited on 9 December 2003.
- [C2] Carroll, A.B., *A Three-Dimensional Conceptual Model of Corporate Performance*, *Academy of Management Review*, Vol. 4, No. 4, 1979, pp.497-505.
- [C3] Likert, R., *The Human Organisation: Its Management and Values*. McGraw-Hill, New York, 1967.
- [C4] Goyder, G., *The Responsible Company*, Basil Blackwell, Oxford, 1961.
- [C5] Dyllick, T., & Hockert, K., *Beyond the Business Case for Corporate Sustainability*, *Business Strategy and the Environment*, Vol. 11, No.2, 2002, pp.130-141.
- [C6] Business and Sustainable Development, *Corporate Social Responsibility*, <http://www.bsdglobal.com/issues/sr.asp>, visited on 30 April 2003.
- [C7] Ward, H., Borregaard, N., & Kapelus, P., *Corporate Citizenship – Revisiting the Relationship between Business, Good Governance and Sustainable Development*, IIEE WSSD Opinion, Johannesburg, 2002.
- [C8] Murphy, K., & Coles, D., *Social Accountability – A new approach to Business*, Sustainable Developments International, Edition 1, 1999, pp.17-19.
- [C9] World Business Council for Sustainable Development, *Corporate Social Responsibility: The WBCSD's journey*, World Business Council for Sustainable Development, January 2002. Available

from <http://www.wbcsd.org/DocRoot/wYlpnLQLljKQfQ3lk0Oj/csr2002.pdf> visited on 9 December 2003.

- [C10] Friedman, M., *The social responsibility of business is to increase its profits*. The New York Time Magazine, 13 September 1970, pp. 32-33; 123-125.
- [C11] Wood, D.J., *Corporate Social Performance Revisited*, Academy of Management Review, Vol. 16, No.4, 1991, pp.691-718.
- [C12] Wartick, S.L., & Wood, D.J., *International Business and Society*, Blackwell, Malden, MA, 1998.
- [C13] Malan, L.A., *Perceptions of Corporate Social Responsibility and their relationship to worker attitudes*, Dissertation submitted to the Faculty of Arts, University of the Witwatersrand, Johannesburg, 1992.
- [C14] Hopkins, M.J.D., *Sustainability in the Internal Operations of Companies*, Corporate Environmental Strategy, Vol. 9, No. 4, 2002, pp.398-408.
- [C15] Sethi, S.P., *A Conceptual Framework for Environmental Analysis of Social Issues and Evaluation of Business Response Patterns*. Academy of Management Review, Vol. 4, No. 1, 1979, pp.63-74.
- [C16] Carroll, A.B., *The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders*. Business Horizons, July-August 1991, pp. 39-48.
- [C17] Bibb, P., & Bendix, W., *Corporate Social Responsibility in the present South African Socio-Economic and Political Context*, Industrial Relations Journal of South Africa. Vol. 11, No. 1, 1991, pp.43-59.
- [C18] Zadek, S., *Stalking Sustainability*, Greener Management International, Vol. 26, Summer, 1999, pp.21-31.
- [C19] Nelson, J., *Corporate Social Responsibility: Passing fad or fundamental to a more sustainable future?*, Sustainable Development International, Vol.7, 2002, pp.37-39.
- [C20] Miller, L., *Social Responsibility and the Mechanical Bull: The International Chamber of Commerce dresses for success*. Retrieved from the World Wide Web: <http://www.globalpolicy.org/reform/business/2002/mechbull.htm>, visited on 21 January 2003.
- [C21] Frankental, P., & House, F., *Human rights - is it any of your business?*, Amnesty International, & Prince of Wales Business Leaders Forum, London, April 2000.
- [C22] Moir, L., *What do we mean by Corporate Social Responsibility?*, Corporate Governance, Vol. 1, No. 2, 2001, pp.16-22.
- [C23] Hopkins, M., *Is Corporate Social Responsibility the same as Corporate Sustainability?* MHC International Ltd Monthly Feature, No. 6, December 2000. Available from: <http://www.mhcinternational.com/sustainability.htm> visited on 11 December 2003.
- [C24] Logan, D., *Corporate Citizenship: defining terms and scoping key issues*, The Corporate Citizenship Company, London, 1997.
- [C25] Hart, S.L., *Beyond Greening: Strategies for a Sustainable World*, Harvard Business Review, Vol. 75, No. 1, 1997, pp. 66-76.

- [C26] Roome, N.J. (ed), *Sustainability Strategies for Industry: The Future of Corporate Practice*, Island Press, Washington, 1998.
- [C27] Holliday, C., *Sustainable Growth, the DuPont Way*, Harvard Business Review, Vol. 79, No. 9, 2001, pp.129-134.
- [C28] Lancaster, O., *Success and Sustainability: A guide to sustainable development for owners and managers of small and medium sized businesses*, Midlothian Enterprise Trust, Edinburgh, 1999.
- [C29] Daly, H.E., *Toward some operational principles of Sustainable Development*, Ecological Economics, Vol. 2, No. 3, 1990, pp. 1-6.
- [C30] Briassoulis, H., *Sustainable Development and its indicators: Through a (planner's) glass darkly*, Journal of Environmental Planning and Management, Vol. 44, No. 3, 2001, pp. 409-427.
- [C31] Holmberg, J., & Sandbrook, R., *Sustainable Development: What is to be done?*, In: Holmberg, J. (ed), *Policies for a Small Planet*, Earthscan, London, 1992, pp.19-38.
- [C32] Azapagic, A., & Perdan, S., *Indicators for Sustainable Development for Industry: A General Framework*, Trans IChemE, Vol. 78, Part B, July 2000, pp. 243-261.
- [C33] World Bank Group, *What is Sustainable Development?*, <http://www.worldbank.org/depweb/english/sd.html> , visited on 11 December 2003.
- [C34] Gardner, J.E., *Decision Making for Sustainable Development: Selected Approaches to Environmental Assessment and Management*, Environmental Impact Assessment Review, Vol. 9, No. 4, pp. 337-366.
- [C35] Elkington, J., *Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development*, California Management Review, Vol. 36, No. 2, 1994, pp.90-100.
- [C36] International Institute for Sustainable Development, Deloitte & Touche, & The World Business Council for Sustainable Development, *Business Strategies for Sustainable Development: Leadership and Accountability for the 90's*, International Institute for Sustainable Development, Winnipeg, 1992. Available from <http://www.iisd.org/publications/publication.asp?pno=242> , visited on 10 December 2003.
- [C37] Knoepfel, I., *Dow Jones Sustainability Group Index: A Global Benchmark for Corporate Sustainability*, Corporate Environmental Strategy, Vol. 8, No. 1, 2001, pp. 6-15.
- [C38] Hedstrom, G., Poltorzycki, S., & Stroh, P., *Sustainable Development: The Next Generation of Business Opportunity*, Arthur D. Little: Prism-Sustainable Development: How Real, How Soon and Who's doing what?, No. 4, 1998, pp. 5-19.

12. Appendix D: Analysis of Sustainable Development Reporting

12.1 Status of Sustainable Development Reporting

Since the early 1990's companies have been targeted to show their commitment to environmental (and later sustainability) issues and to furthermore, report on their proactive activities as well the damaging impacts of their operational activities on the environment as well as society [D1]. The idea of sustainable development reporting is based on the simple proposition that economic actors have a local as well as global environmental and social impact and that it is their responsibility to disclose those impacts to all their stakeholders [D2]. Although there are historical examples of social reporting in the early 1970's it lost momentum in the 1980's [D2] and only in the first decade of the 21st century the trend in corporate reporting starting shifting from being solely environmental to incorporate both environmental and social aspects [D1]. Thus, together with the annual financial reporting, companies now try to report on all dimensions of sustainable development. This marks the emergence of a new era in corporate accountability [D3]. The evolution in sustainable development reporting have been analysed and it is believed that companies progress through five different stages, which meet variable stakeholder needs [D4]. The five-stage evolution process is shown in

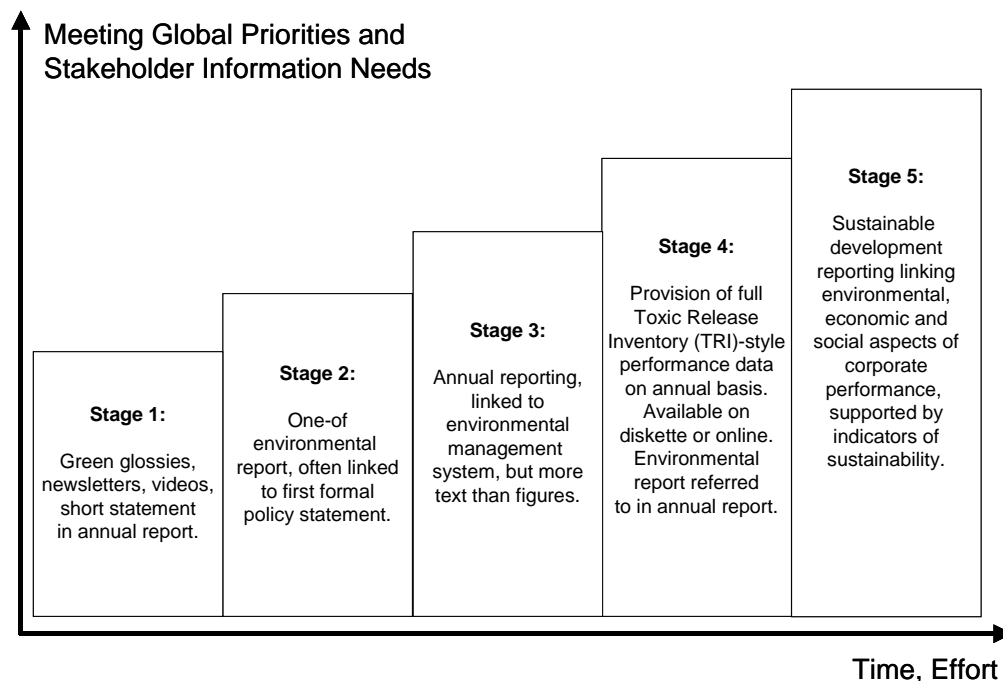


Figure 12-1: The evolution process for sustainable development reporting [D4]

Nevertheless, corporate sustainable development reporting is still viewed by many as mere window dressing, due to pressure from governments and society, which is likely to stop the moment these

pressures recede [D1]. A survey amongst NGOs revealed that on average only 44% of sustainability reports are “believable” according to the NGO’s [D5] and experts at the European Accounting Federation has warned that unless companies have their reports independently verified it is “*little more than advertising*” [D6].

In spite of this the quantity and quality of sustainability reporting initiatives continue to grow as more and more companies start issuing reports [D7]. The 2001 Benchmark Survey of the State of Global Environmental and Social reporting revealed that in 2001 50% of the top 100 global companies were producing environmental and social reports [D2]. In addition, the 2002 KPMG International Survey of Corporate Sustainability Reporting revealed that 45% of the Global Fortune Top 250 companies are reporting on sustainability issues, an increase of 10% from the 1999 survey. Nevertheless, only 29% of these companies had their report verified by an independent third party [D8]. Furthermore, the style of reporting is not standardized and the following ways for structuring sustainability reports have been identified:

- according to stakeholders, e.g. the Body Shop;
- according to sections of the business;
- according to environmental and social issues; and/or
- according to guidelines such as the Global Reporting Initiative or the Public Environmental Reporting Initiative [D2].

Companies do not always report on all three dimensions of sustainable development in the same document, but rather issue separate financial, social and environmental, health and safety reports. Social reporting is also not as well developed as environmental reporting yet and the use of truly “societal” external indicators is rather infrequent [D1]. Adding to the complexity of social sustainability reporting is the fact that the impact of a business on society can be measured on three different levels, which are not mutually exclusive. These levels are:

- measuring performance against stated objectives in vision, mission and value statements by interviewing stakeholder groups;
- measuring whether the company meet stakeholder expectations by first surveying what stakeholders think the company should be doing and then determining to what degree it is doing it; and
- measuring stakeholders’ actual experience of how the company is performing, thus the true social impact of the activities by using indicators developed by taking stakeholders’ expectations into consideration [D9].

An analysis of the sustainable development reports of the Global Fortune Top 250 companies revealed that, with regards to societal aspects the focus so far are more on expression of concerns, intentions and policies, than on indicators measuring actual impacts [D1].

In South Africa, the King II report on Corporate Governance promoted integrated-sustainability reporting or triple-bottom-line reporting and recommended that the practice take force from March 2002. Nevertheless few companies have instituted the process by February 2003 [D10]. The KPMG 2001 survey of Sustainability Reporting in South Africa revealed that reporting on sustainability issues remained at a fairly superficial level. Also, of the seventeen standalone-reports on sustainability issues reviewed, only one report had sufficient information on all three dimensions of sustainable development to be viewed as a sustainability report. The other reports were classified as, either Health, Safety and Environmental Reports, or Social Reports [D11].

12.2 Analysis of Sustainable Development Reports

Eight sustainable development reports have been analysed to determine the scope of issues reported on. Four South African companies were chosen as well as four international companies with business operations in South Africa. The Financial Mail's Top Companies 2002 report has been used to choose the South African companies. The four top companies based on turnover (excluding financial institutions) have been chosen. These companies are: Billiton, Anglo American, Sasol and Sappi [D12]. The 2003 Fortune list of most admired companies were used to choose the international companies. Due to the process industry focus of this document two companies in the chemical division and two companies in petroleum refining division have been chosen. These companies are: Dow Chemical, Bayer, BP and the Royal Dutch/Shell Group [D13].

All of the companies except SAPPI have published sustainability or environmental, health, and safety reports or societal reports. The seven reports that have been analysed are:

- BP Environmental and Social Review - 2002 [D14]
- The Dow Global Public Report – 2002 [D15]
- The Shell Report: Meeting the energy challenge – 2002 [D16,D17]
- Anglo American Report to Society: Towards Sustainable Development – 2002 [D18]
- BHP Billiton Health Safety Environment and Community Report: Policy into Practice – 2002 [D19]
- Sasol Sustainable Development Report: Share it with Sasol – 2002 [D20]
- Bayer Sustainable Development Report – 2001 [D21].

All reports were issued in 2002 except the Bayer report, which was issued in 2001. This was the most recent report released by Bayer at the time of the analysis. An analysis of the seven reports is summarised in Table 12-1.

Table 12-1: Analysis of Sustainable Development Reports

ANALYSIS OF SUSTAINABLE DEVELOPMENT REPORTS								
Question Number	Name of Company	BP	Dow	Shell	Anglo American	Billiton	SASOL	Bayer
1	Annual Turnover (\$ Million)	180186	27609	236598	15,145	17778	5996	27101 *
2	Number of Employees	115250	50725	116000	127000	51000	31100	116900
3	Does the company report on sustainability using:							
	a) Web	x	x	x	x	x		x
	b) Printed report	x		x	x	x	x	x
	c) Section in Annual report		x	x	x		x	
4	Does this reporting cover the following dimension of sustainable development							
	a) Environmental	x	x	x	x	x	x	x
	b) Economic		x	x	x		x	
	c) Social - only CSR							
	d) Social - CSR & Employee well-being							x
	e) Social - CSR, Employees and impact on society	x	x	x	x	x	x	
5	Is the report structured according to:							
	a) Different stakeholders							
	b) Section of the business	x				x		
	c) Three dimensions of sustainability		x	x	x	x	x	x
	d) Social and Environmental issues	x			x	x		x
	e) Specific Guidelines e.g. GRI							
6	Does the company issue separate reports for every division or country in which it operates?							
		Yes	No	In some instances	Yes	Yes	No but performance per section is listed	No
7	Does the report contain the following:							
	a) Statement by CEO	x	x	x	x	x	x	x
	b) Mentioning of GRI guideline compliance	x	x	x	x	x	x	x
	c) Mentioning of performance on a SRI index or SRI evaluation		x	x		x	x	x
	d) Performance Indicators	x	x	x	x	x	x	x
	e) Goals		x	x	x	x	x	x
	f) Assurance Statement or Third Party Review Statement	x	x	x	x	x	x	x
8	Are Health and Safety of employees discussed as:							
	a) an environmental aspect		x					
	b) a social aspect			x			x	
	c) Separate issue	x			x	x		x
9	Are social performance indicators used?							
		Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	If yes, what of the following types of indicators are used (even if used for another dimension of sustainability)							
	Employees							
	-Number of Employees	x	x		x	x	x	
	-Diversity Profile of workforce by gender and nationality	x	x	x	x	x		
	-Non discrimination facts e.g. percentage of previous disadvantaged people in management			x	x		x	
	-Number of Fires, explosions and releases						x	x
	-Number of Leaks, breaks and spills						x	x
	-Indicators with regards to Health & Safety e.g. fatal accident rate; number of fatalities; lost time injury frequency, recordable case rate	x	x **	x	x	x	x	x
	-Indicators with regards to Wages			x		x		
	-Indicators with regards to Child labour			x		x		
	-Indicators with regards to Contracting and Procurement			x				
	-Indicators with regards to worker training e.g. training hours or training expenses		x		x			
	-Indicators with regards to dismissals or staff turnover and reasons why	x			x			
	-Indicators with regards to ethics e.g. number of ethic workshops	x	x					
	-Indicators with regards to Union and staff - membership, involvement and forums and grievance procedures			x				
	-Indicators with regards to worker empowerment and internal complaints		x				x	
	Society							
	-Indicators with regards to community outreach forums						x	
	-CSI Investment/Community Spending	x	x	x	x	x		
	-Public Favorability Scores							
	-Transportation Incidents							x
	-Number of External Complaints					x	x	
	-Indicators with regards to economic distribution to regions, or taxes or by type				x	x		
	- Political payments, competition cases and bribery cases			x				

* Turnover is equal to €30275, the average \$/€ exchange rate for 2001 was used to do a conversion (\$1 = €1.1171) [178]

** The key performance indicators were listed under the environmental dimension of the report.

It can be concluded from the analysis that social reporting still has a very strong internal focus and that the strongest external social performance indicator remains Corporate Social Investment or CSR investments. It is thus be concluded that the use of truly “societal” external indicators (i.e. indicators that assess the true impact of the business operations on society) is rather infrequent. However, there is a definite move towards reporting on societal aspects since most reports expressed concerns and

mentioned intentions, policies and actual CSR projects, which were sometimes discussed as case studies.

12.3 Reference

- [D1] Kolk, A., *Trends in Sustainability Reporting by the Fortune Global 250*, Business Strategy and the Environment, Vol. 12, No. 5, 2003, pp. 279-291
- [D2] Line, M., Hawley, H., & Krut, R., *The Development of Global Environmental and Social Reporting*, Corporate Environmental Strategy, Vol. 9, No. 1, 2002, pp. 69 –78.
- [D3] Ranganathan, J., *Sustainability Rulers: Measuring Corporate Environmental and Social Performances*, Sustainable Enterprise Perspectives, World Resources Institute Publication, Vol. May 1998, 1998.
- [D4] Wheeler, D., & Sillanpää, M., *The Stakeholder Corporation: A Blueprint for maximizing stakeholder value*, Pitman Publishing, London, 1997.
- [D5] GreenBiz.com, *Survey: NGOs more likely to believe CSR reports that admit fault*, GreenBiz.com, 26/11/2003, retrieved from <http://www.wbcsd.com/plugins/DocSearch/details.asp?type=DocDet&DocId=3185> visited on 1 December 2003.
- [D6] Chapman, P., *EU Regulations: Auditors push for sustainability yardsticks to verify firms' claims*, EIU ViewsWire, 3 May 2004.
- [D7] World Business Council for Sustainable Development, *Corporate Social Responsibility: The WBCSD's journey*, World Business Council for Sustainable Development, January 2002. Available from <http://www.wbcsd.org/DocRoot/wYlpnLQLJjKQfQ3lk00j/csr2002.pdf> visited on 9 December 2003.
- [D8] Visser, W., & Panton, A., *Sustainability Reporting becoming mainstream*, <http://www.kpmg.co.za/modules/library/detail.cfm?libid=189&month=6&year=2002> visited on 15 September 2002.
- [D9] Wilson, A., *Social Reporting: Developing Theory and Current Practice*, In: Bennett, M. & James, P., (eds), *Sustainable Measures*, Greenleaf Publishing, Sheffield, 1999, pp 509-528.
- [D10] Spicer, D., *SA business still coming to terms with triple-bottom-line reporting*, Engineering News, Vol. 23, No. 5, 2003, pp.16-17, 22.
- [D11] Visser, W.A.M-T., *Sustainability Reporting in South Africa*, Corporate Environmental Strategy, Vol. 9, No. 1, 2002, pp. 79-85.
- [D12] Financial Mail, *Top Companies*, Supplement to the Financial Mail, 28 June 2002.
- [D13] Hjelt, P., *The World's Most Admired Companies*, Fortune, Vol. 147, No. 4, 2003, pp. 24-32.
- [D14] BP, *Environmental and Social Review*, BP Distribution Services, Surrey, 2003.
- [D15] The Dow Chemical Company, *The Dow Global Public Report*, The Dow Chemical Company, Michigan, 2003.
- [D16] Royal Dutch/Shell Group of Companies, *The Shell Report: Meeting the Challenge*, Royal Dutch/Shell Group of Companies, The Hague, 2003.

[D17] Royal Dutch/Shell Group of Companies, *Financial and Operational Information 1998 – 2002*, Royal Dutch/Shell Group of Companies, The Hague, 2003.

[D18] Anglo American, *Anglo American Report to Society: Towards Sustainable Development*, Anglo American Corporate Communications Department, London, 2003.

[D19] BHP Billiton, *Health Safety Environment and Community Report: Policy into Practice*, BHP Billiton. Melbourne, 2003.

[D20] Sasol, *Sasol Sustainable Development Report: Share it with Sasol*, Sasol, Rosebank, 2003.

[D21] Bayer, *Sustainable Development: Bayer's commitment to society and the environment*, Bayer, 2002

13. Appendix E: Minimum Wages

Comparison of minimum wages between different countries

Country	Minimum wage		
	Pounds sterling (£)	Euros	US dollars (\$)
European Union			
Luxembourg ¹	6.04	9.67	8.59
Netherlands ²	4.54	7.35	6.64
Belgium ³	4.27	6.85	6.21
France ⁴	4.17	6.67	6.03
UK ⁵	4.10	6.57	5.96
Ireland	3.96	6.43	5.76
Italy	3.95	6.41	5.71
Greece	1.65	2.65	2.40
Portugal	1.30	2.09	1.89
Spain	1.13	1.80	1.64
Eastern Europe			
Poland	0.77	1.22	1.12
Hungary	0.76	1.21	1.10
Czech Republic ⁶	0.54	0.88	0.79
Turkey ⁷	0.48	0.77	0.70
Romania	0.20	0.32	0.29
Bulgaria	0.17	0.27	0.24
Slovenia	0.12	0.20	0.18
Ukraine	0.09	0.15	0.14
Russia	0.04	0.07	0.06
South America			
Argentina	0.86	1.38	1.25
Chile	0.64	1.03	0.94
Peru	0.50	0.80	0.74
Colombia	0.48	0.77	0.70
Brazil	0.25	0.40	0.37
North America			
USA ⁸	3.55	5.68	5.15
Asia Pacific			
Australia	3.82	6.11	5.54
Japan	3.48	5.57	5.05
New Zealand ⁹	2.28	3.64	3.31
Taiwan	1.97	3.15	2.87
South Korea	0.99	1.59	1.45
Vietnam	0.13	0.22	0.20

¹ In Luxembourg, there is a minimum wage for skilled workers (shown in the table) and another for unskilled workers and young persons under the age of 18 (equivalent of £5.04; EUR 8.06; and US\$ 7.16).

² For an employee over age 21.

³ This amount applies to workers aged over 21. Lower rates are set for workers under the ages of 20, 19, 18 and 17.

⁴ A different minimum income is set for young workers under the age of 18.

⁵ In the UK, lower rates apply to employees between 18 and 21, or over 21 for the first six months on a new job

⁶ Lower rates apply to workers on a first employment contract (90%), to employees between 18 and 21 (90%), to teenagers (80%), and to people entitled to a partial or full disability pension (75% and 50%, respectively).

⁷ For workers above age 18.

⁸ This is the US federal minimum wage. Some states have set a minimum wage that is slightly higher than the federal minimum wage.

⁹ This amount is for persons over 20. A lower rate applies to young employees between ages 16 and 19

Exchange rates of 3 September 2001 had been used

Source: The Irish Jobs Column, *New research reveals wide variations in employment conditions and benefits worldwide*, <http://www.exp.ie/advice/mercero.html> visited on 2 February 2004

14. Appendix F: Case Study Protocol for the verification of the sustainability assessment framework

14.1 Overview of the first set of case studies

The main goal of the first set of case studies is to verify that the social aspects that are relevant to the life cycle of an operational initiative are included within the social sustainability framework. The case studies will be divided into three distinct parts, each focussing on one specific life cycle phase.

The main research question for each of these parts is:

- What are the social aspects that become problematic or must be addressed in the construction/operation/decommissioning phase of the operational initiative?

The research question links directly to the second main research question, “*What social business sustainability impacts or aspects should be considered in the project life cycle?*”. The objective with these case studies is descriptive in nature and thus the general analytic strategy is to describe the social aspects in relation with the proposed framework and to identify any social aspects that cannot be classified into the framework.

14.2 Framework Verification Part 1: Construction Phase

The unit of analysis for this part is the construction project of a new operational initiative. The project progresses through the normal project life cycle phases and is concluded when the operational initiative complies with the set standards of production and is handed over to a business unit. Four different construction projects are investigated.

14.2.1 Field Procedures

The case study relies on three sources of information, namely: documents, archival records and interviews. Interviews are conducted personally or telephonically and take approximately 20 to 30 minutes. Interviews are not only conducted with company personnel but also with relevant community members or members of NGO’s where applicable.

The following preparations are required:

- Identification of relevant people to interview or to obtain information from
- Gathering of contact details for the relevant company personnel
- Letter of introduction to relevant company personnel
- Acquire permission to obtain documentation
- Schedule interview or meeting times

14.2.2 Case Study Questions

The following questions will be addressed:

- What social issues had to be addressed in the project?
 - Check against the framework
- Why were these social issues addressed?
- Were these issues addressed proactively or reactively? Why? How?
- At what stage in the project were these aspects detected or addressed for the first time?
- At what stage in the project has reliable information with regards to these aspects been available?
(This question must be asked for the whole framework)
- How were these social issues documented?
- Has any social issue become problematic?
 - If so, why?
 - And how was it handled?
- How much time and money (of the project budget) had been allocated to deal with social issues?
- Have social issues influenced a decision at any of the decision gates?
- For the second project only:
 - Was it a social issue that stopped the project?
 - If so, what issue and why?
 - How could things have been handled differently?
 - Would it have changed the outcome of the project?

14.3 Framework Verification Part 2: Operational Phase

The unit of analysis for this part is the operational plant that is manufacturing products. The record of complaints of companies is investigated. The aim is to investigate records of complaints for at least the last 2 years of four different chemical facilities. Two of the facilities operate in developed countries, namely United States and Germany, and the other two in the same developing country, namely South Africa. The age of the facilities are summarised in Table 14-1.

Table 14-1: Age of chemical facilities

Chemical Facility	Time in Operation
United States	± 45 years
Germany	± 80 years
South Africa A	± 55 years
South Africa B	± 25 years

14.3.1 Field Procedures

The case study will rely on two sources of information, namely: archival records and interviews. Interviews will be conducted personally or telephonically and will take approximately 20 to 30 minutes.

The following preparations are required:

- Identification of relevant people to interview or to obtain information from
- Gathering of contact details for the relevant company personnel
- Letter of introduction to relevant company personnel and other
- Acquire permission to obtain documentation
- Schedule interview or meeting times

14.3.2 Case Study Questions

The case study will be based on an archival analysis and interviews with the persons responsible for the record of complaints. Stakeholders such as community members and members of NGO's will be interviewed where applicable. The main source of information is the archival records.

The archival records will be analysed by using the following classification systems for each complaint:

Classification System 1: Origin of Complaint

- Internal Complaint
- External Complaint

Classification System 2: Nature of External Complaint (A)

- Economic
- Social
- Environmental³
- Other – If other specify

Classification System 3: Nature of External Complaint (B) (If Social)

- Employment Stability
- Employment Practices
- Health & Safety (of employees)
- Capacity Development
- Human Capital

³ External environmental complaints with regards to pollution or noise will be viewed as Social complaints and specifically Community Capital in nature. This is also relevant to the decommissioning and construction phases.

- Productive Capital
- Community Capital
- Socio-Economic Performance
- Socio-Environmental Performance
- Information Provision
- Stakeholder Influence
- Other – If other specify

Classification System 4: Action taken with regards to External complaint

- Ignored
- Investigation and report
- Changes made to address problem (Specify)

Classification System 5: Nature of Internal Complaints (A)

- Environmental Incidents (e.g. spilling of chemicals, road accidents, etc).
- Social Incidents (e.g. health related or work related complaints)
- Other (e.g. production process problems that should be documented)

Classification System 6: Nature of External Complaint (B) (If Social)

- Use Classification System 3.

14.3.2.1 Interviews with responsible persons of record of complaints:

The following questions will be addressed in the interviews:

- What is the normal process to handle complaints?
- Are all complaints captured in the record of complaints?
- What is the average feedback time on complaints?
- Can complaints be made anonymously?
- What mechanisms are in place to allow stakeholders to complain?
- Are complaints with regards to social issues common?
- Are these complaints handled differently?
- Is there a difference in the way in which internal and external complaints are handled?

14.3.2.2 Interviews with stakeholders:

The following questions will be addressed in the interviews:

- Is the process of complaints known to stakeholders? Are stakeholder complaints reported back to stakeholders/communities?
- How does the company react towards complaints from stakeholders?
- What is the general feeling with regards to the company's stakeholder engagement approaches?

- Has the company add value to the community in which it operates?

14.4 Framework Verification Part 3: Decommissioning Phase

The unit of analysis for this part is the decommissioning and rehabilitation of an operational initiative.

Three decommissioning projects or sites are studied, namely:

- a cyanide plant;
- a fibres plant; and
- a mine.

14.4.1 Field Procedures

The case study will rely on three sources of information, namely: documents, archival records and interviews. Interviews will be conducted personally or telephonically and will take approximately 20 to 30 minutes. Interviews will not only be conducted with company personnel but also with relevant community members or members of NGO's where applicable.

The following preparations are required:

- Identification of relevant people to interview or to obtain information from
- Gathering of contact details for the relevant company personnel
- Letter of introduction to relevant company personnel
- Acquire permission to obtain documentation
- Schedule interview or meeting times

14.4.2 Case Study Questions

The following questions will be addressed:

- What social issues had to be addressed in the project?
 - Check against the framework
- Why were these social issues addressed?
- Were these issues addressed proactively or reactively? Why? How?
- At what stage in the project were these aspects detected or addressed for the first time?
- At what stage in the project has reliable information with regards to these aspects been available?
(This question must be asked for the whole framework)
- Has social information been gathered or projected during the construction project of the operational initiative?
- If so, what is the accuracy of that information?
- How were these social issues documented?
- Has any social issue become problematic?
- If so, why?
- And how was it handled?

- How much time and money (of the project budget) had been allocated to deal with social issues?
- Have social issues influenced a decision at any of the decision gates?

14.5 Summary

In summary the research design for each set of case studies are summarised using components identified by Yin [1] and are shown in Table 14-2.

Table 14-2: Summary of Research Designs

Phase	Study Question	Unit of Analysis	Data Analysis Technique	Case Structure	Description
Construction	What are the social aspects that become problematic or had to be addressed in the project?	Construction project of a new operational initiative	Evidence must be placed into the proposed social sustainability framework.	a) Background Information b) Case Approach (if applicable) c) Social Issues manifesting in project	Study (if applicable) Issues in project
Operation	What are the social aspects become problematic to community members?	An operational facility	Data are analysed following the classification system described in section 14.3.2.	a) Background Information b) Complaint Process c) Analysis of Complaints	
Decommissioning	What are the social aspects that become problematic or had to be addressed in the project?	Decommissioning and rehabilitation project of an operational facility.	Evidence must be placed into the proposed social sustainability framework.	a) Background Information b) Reasons for Decommissioning c) Social Issues manifesting in project	

Yin [1] proposes four tests to judge the quality of the research design namely: Internal and external validity, reliability and construct validity. In order to address these aspects the following tactics are proposed for case study execution:

- Multiple data sources will be used as far as possible. If not available, data obtained should be verified by interviews with various project members and stakeholders.
- Key informants will be requested to review draft case study reports.
- The case study protocol will be applied during all executions.

14.6 References

[1] Yin, R.K., *Case Study Research: Design and Methods*, 2nd Edition, SAGE Publications, London, 1994.

15. Appendix G: Survey Questionnaire

15.1 Survey Design

The survey was designed to determine whether the specific criteria are relevant to business. A criterion is relevant to business when it is a social aspect which business should address or consider in its activities or when it is a social aspect for which business should take responsibility. The survey consists of three sections. Section 1 gathers general information to determine the knowledge level of participants with regards to sustainable development as well as the expertise of the participants. Section 2 addresses the main criteria of the three dimensions of sustainable development and Section 3 addresses the lower levels of social criteria. Two aspects thereof are evaluated, namely:

- the relevance thereof in terms of a three point scale – High, Medium and Low; and
- the appropriateness of the level within the framework using a binary response – Yes/No.

The survey was designed to be completed electronically and distributed using e-mail. Respondents had the option to respond either via e-mail or to fax it to the research institution.

The survey address the second research question: *What social business sustainability impacts or aspects should be considered in the project life cycle?* Although the survey address business relevance, it specifically relates to the first sub-question, namely, *What are the social aspects relevant to project management within the process industry?* since criteria can only be relevant to company projects if it is relevant to business.

15.2 Example of Survey Questionnaire

15.2.1 Information Page

AIM OF THIS SURVEY:

- Evaluate the relevance of suggested criteria to measure sustainable development from a process industry perspective.
- Determine whether the criteria (especially social criteria) address all aspects of sustainable development from a company perspective.

GUIDELINES ON COMPLETING THE SURVEY

- The survey can be completed electronically. Please save the file when done and mail it back to Jurie Steyn or directly to Carin Labuschagne (carin.labuschagne@up.ac.za)
- The survey has been set up in Word using forms. Please use the “TAB” or “Page Up”/“Page Down” keys to move between questions. Boxes can be marked or unmarked by clicking on the “Space bar” when on the box.
- If preferred the survey can be faxed to (012) 362 5307 to maintain confidentiality.
- Thank you very much for your time.

15.2.2 General Questions

GENERAL QUESTIONS:

Job Description:

Do you regularly work with or are you regularly involved with any of the following activities or business models:

Business Development and Implementation (BD&I) Model

Environmental Impact Assessment Studies

CSR Projects

Project Management (Gate Reviews etc)

In what way?

Please indicate your awareness on the following issues:

Does your company have a sustainable development strategy?

Yes No Don't know

If yes, how familiar are you with the strategy? Choose one of the following

Do you think Corporate Social Responsibility Projects contribute towards the overall sustainability of a company?

Yes No Don't know

Do you think social and environmental aspects and impacts of a project should be taken into consideration during GATE REVIEW meetings?

Yes, environmental only

Yes, social and environmental

Yes, social only

No

Please motivate your answer in question 4 briefly

15.2.3 Main criteria

Sustainable Development Criteria for Business

The 2002 World Summit on Sustainable Development highlighted that the concept of sustainability is increasingly recognized by governments and businesses worldwide. There are currently more than 100 definitions for sustainable development. For the business environment the International Institute for Sustainable Development's definition is proposed: *"For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today, while protecting, sustaining and enhancing the human and natural resources that will be needed in the future"*. A prerequisite for sustainable development is, however, the construction of sustainability indicators. On national and community level progress have been made; nevertheless the concept of business sustainability indicators is still in an infancy stage. This survey proposes a set of sustainability criteria, which address all three general accepted objectives of sustainability, i.e. to measure the sustainability of new or current business initiatives. The aim of the survey is to evaluate the relevance and appropriateness of the proposed criteria.

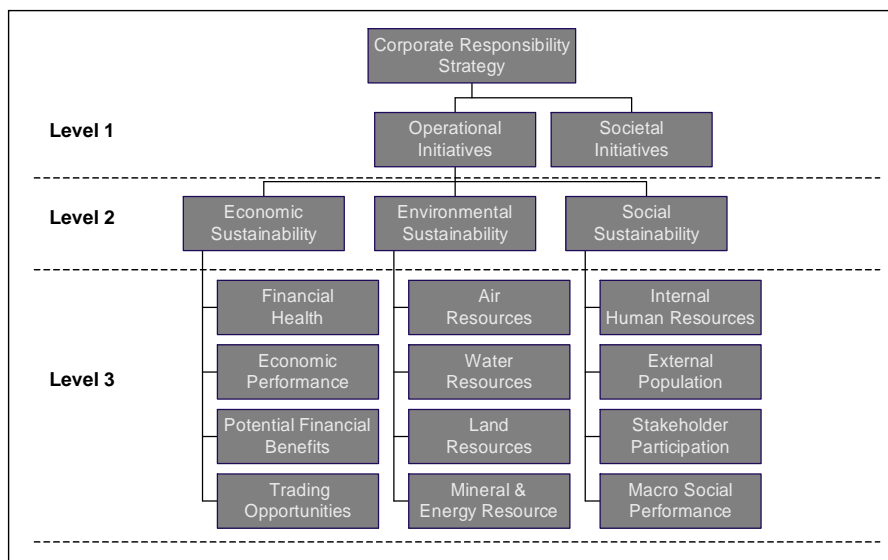


Figure 15-1: Framework to assess sustainability

A prerequisite for the introduction of sustainable measures in a company is a corporate strategy that acknowledges the company's responsibilities towards society and the support of local, national and/or international sustainable development initiatives. The proposed framework therefore focuses on business sustainability from a strategic perspective and consists of different levels. The corporate strategy is supported by two main company focus areas namely operational and societal initiatives (Level 1). Operational Initiatives include all core business activities, projects, day-to-day functioning of the business etc., which should all support the sustainability strategy. Societal initiatives refers to all company activities that influence the sustainability of the business, but does not form part of its core business activities, e.g. philanthropic projects such as Sasol support for wildlife literature. Level 2 lists the three main sustainability categories against which business initiatives are evaluated while the sub-criteria of the social criterion are listed at 4 (Figure 2). Definitions for the Level 2 categories and Level 3 criteria are provided in the following table.

Table 1: Definitions of Categories

Category/Criteria	Definition
<i>Economic Sustainability</i>	<i>The economic dimension concerns the economic health and viability of the business. It has an internal focus that evaluates the organization's short and long-term financial stability and survival capabilities.</i>
Financial Health	Financial Health entails those aspects assessing the internal financial stability of a company and includes traditional measures such as profitability, liquidity and solvability.
Economic Performance	Economic Performance assesses the company's value as perceived by shareholders, top management and government and includes measures such as share profitability, contribution to Gross Domestic Product as well as market share indicators.
Potential Financial Benefits	Potential Financial Benefits assess financial benefits other than profits e.g. national and/or international subsidies based on the environmental, social and/or technological improvements due to company activities.
Trading Opportunities	Trading opportunities assess the vulnerability of the organization's trade network as well as the risks it is exposed to by the network it is embedded in, by considering the number of national and/or international organizations in the trade network.
<i>Environmental Sustainability</i>	<i>The environmental dimension concerns an organization's impacts on the environment. It has an external focus and addresses impacts on air, water, land and mineral and energy resources.</i>
Air Resources	Air resources assess an organization's contribution to regional air quality effects (e.g. visibility, smell, noise levels, etc.) as well as to global effects such as global warming and stratospheric ozone depletion.
Water Resources	Water resources assess the availability of clean and safe water by focusing on an organization's impacts on the quantity and quality of water.
Land Resources	Land resources assess an organization's impacts on the quantity and quality of land resources, including aspects such as biodiversity, erosion, transformation and rehabilitation ability, etc.
Mineral and Energy Resources	Mineral and energy resources assess an organization's contribution to the depletion of non-renewable mineral and energy resources.
<i>Social Sustainability</i>	<i>The social dimension concerns the organization's impact on the social systems in which it operates, as well as the organization's relationships with its various stakeholders.</i>
Internal Human Resources	Internal Human Resources focuses on the social responsibility of the company towards its workforce and includes all aspects of employment (e.g. employment practices, work conditions, workforce development etc.)
External Population	External population focuses on the impact of the company's operational initiatives on a society, e.g. impact on availability of services; community cohesion, economic welfare, etc.
Stakeholder Participation	Stakeholder participation focuses on the relationships between the company and ALL its stakeholders (internally and externally) by assessing the standard of information sharing and the degree of stakeholder influence on decision-making.
Macro Social Performance	Macro Social Performance focuses on the contribution of an organization to the environmental and financial performance of a region or nation (e.g. contribution to exports)

Criteria Evaluation						
Please rate whether you think the specific criteria is relevant to business sustainability evaluation i.e. does it contribute towards overall sustainability of a business.						
ECONOMIC SUSTAINABILITY:LEVEL 3 CRITERIA						
Criteria	Relevance			Appropriate Level		
	High	Medium	Low	Yes	No	If no, what level is appropriate for the criteria?
Financial Health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Economic Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Potential Financial Benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Trading Opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ENVIRONMENTAL SUSTAINABILITY:LEVEL 3 CRITERIA						
Criteria	Relevance			Appropriate Level		
	High	Medium	Low	Yes	No	If no, what level is appropriate for the criteria?
Water Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Air Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Land Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mineral & Energy Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SOCIAL SUSTAINABILITY:LEVEL 3 CRITERIA						
Criteria	Relevance			Appropriate Level		
	High	Medium	Low	Yes	No	If no, what level is appropriate for the criteria?
Internal Human Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
External Population	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Stakeholder Participation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Macro Social Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

15.2.4 Social Criteria

LEVEL 4: Social Criteria Evaluation

Please rate whether you think the specific criteria is relevant to social business sustainability evaluation i.e. does it contribute towards overall social sustainability of a business.

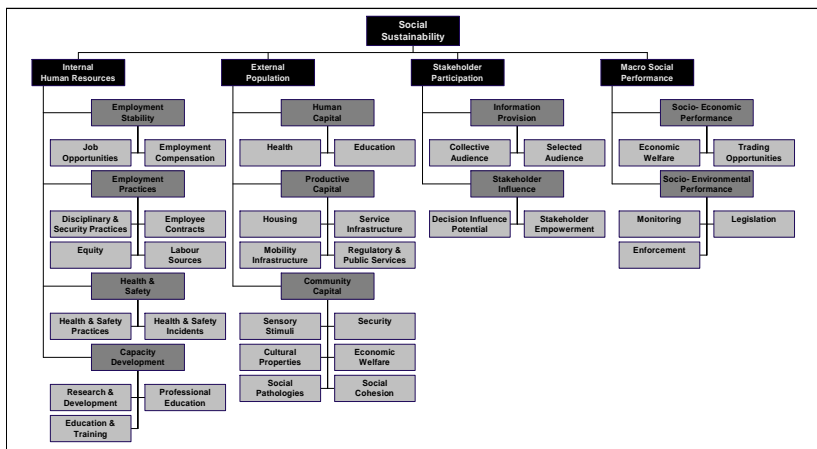


Figure 2: Social Sustainability Framework

SOCIAL SUSTAINABILITY: LEVEL 4 CRITERIA (See Figure 2 and Table 2 for clarity on Level 4 Criteria)						
Criteria	Relevance			Appropriate Level		
	High	Medium	Low	Yes	No	If no, what level is appropriate for the criteria?
Employment Stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Employment Practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Health and Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Capacity Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Human Capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Productive Capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Community Capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Information Provision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Stakeholder Influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Socio-Economic Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Socio-Environmental Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Table 2: Definitions of Level 4 Social Criteria

Criteria	Definition
Employment Stability	The criterion addresses a business initiative's impact on work opportunities within the company, the stability thereof as well as evaluating the fairness of compensation.
Employment Practices	Disciplinary and Secrecy Practices as well as employee contracts are addresses under this criterion. These are evaluated to ensure that it complies with the laws of the country, international human rights declarations as well as other human rights and fair employment practice standards. The gender and racial equity inside the company is also addressed under this criterion as well as the legitimacy of labour sourcing practices, e.g. child labour, etc.
Health and Safety	The criterion focuses on the health and safety of the workforce and evaluates preventive measures as well as the occurrence and handling of health and/or safety incidents.
Capacity Development	The criterion addresses two different aspects namely research and development and career development.
Human Capital	Human Capital refers to an individual's ability to work in order to generate an income and encompasses aspects such as health, psychological wellbeing, education, training and skills levels. The criterion addresses Health and Education separately. Health focuses on any illnesses caused by, or due to, the operational initiative as well as additional strain on medical facilities. Education considers the impact on education facilities and the effect of possible training opportunities and the sharing of information on the community's level of education
Productive Capital	Productive capital entails the assets and infrastructure an individual needs in order to maintain a productive life. The criterion measures the strain placed on these assets and infrastructure availability by the business initiative.
Community Capital	This criterion takes into account the effect of an operational initiative on the social and institutional relationships and networks of trust, reciprocity and support as well as typical characteristics of the community.
Information Provision	The quantity and quality of information shared with stakeholders are measured. Information can either be shared openly with all stakeholders (Collective Audience) or shared with targeted, specific groups of stakeholders (Selected Audience).
Stakeholder Influence	The degree to which the company actually listens to the stakeholders' opinion should also be evaluated. Two separate groups are included: Decision Influence Potential and Stakeholder Empowerment.
Socio-Economic Performance	This criterion addresses the external economic impact of the company's business initiatives. Economic welfare (contribution to GDP, taxes, etc.) as well as trading opportunities (contribution to foreign currency savings etc) are addressed separately.
Socio-Environmental Performance	This criterion considers the contributions of an operational initiative to the improvement of the environment for society on a community, regional and national level. The extension of the environmental monitoring abilities of society, as well as the enhancement of legislation and the enforcement thereof, are included in this criterion.

16. Appendix H: Additional Survey Results

16.1 Participants perception of Sustainable Development

The survey included some general questions on Sustainable Development. The first of these dealt with the sustainable development strategy of the company and the second tested the participants' knowledge of these strategies. The results of these two questions are summarised in

Participants familiarity with Sustainable Development strategy of company.

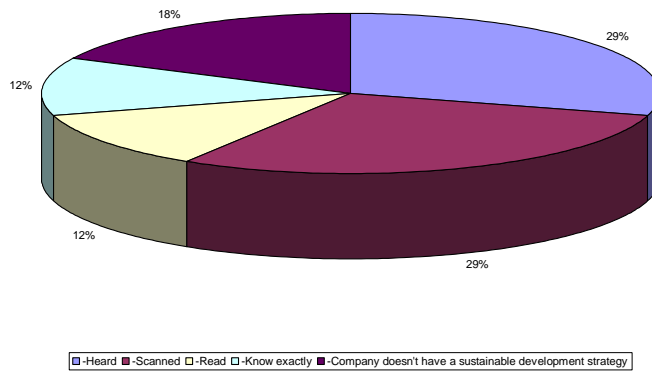


Figure 16-1: Respondents familiarity with Sustainable Development Strategy of Company

The third question assessed whether the respondents thought Corporate Social Responsibility projects contributed to the overall sustainability of the company. Ninety-six (96%) percent of all respondents thought it did. The last question dealt with project decision-making and asked whether social and environmental aspects should be taken into consideration during the decision making process. Results are shown in Figure 16-2.

Aspects that should be considered in decision making

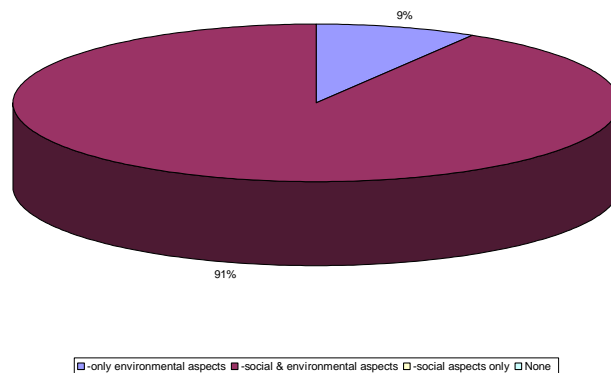


Figure 16-2: Aspects that should be considered in decision making.

16.2 95% Confidence Intervals of true proportions

The following figures (Figure 16-3 to Figure 16-7) depict the 95% confidence intervals of true proportions, which is also summarised in Table 16-1. The following abbreviations are used on the specific figures:

- Main Social Criteria
 - IHR: Internal Human Resources
 - EP: External Population
 - MSP: Macro Social Performance
 - SP: Stakeholder Participation
- Internal Human Resources
 - ES: Employment Stability
 - EP: Employment Practices
 - HS: Health and Safety
 - CD: Career Development
- External Population
 - HC: Human Capital
 - PC: Productive Capital
 - CC: Community Capital
- Macro Social Performance
 - EC: Socio-Economic Performance
 - ENV: Socio-Environmental Performance
- Stakeholder Participation
 - IP: Information Provision
 - SI: Stakeholder Influence

The H, M and L refer to the specific rating given.

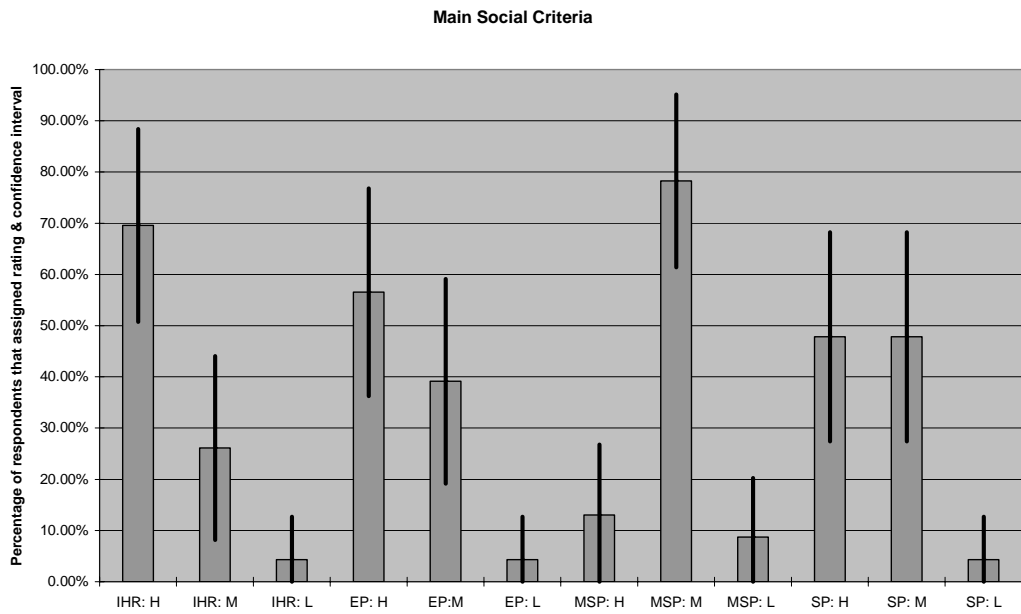


Figure 16-3: Main Social Criteria

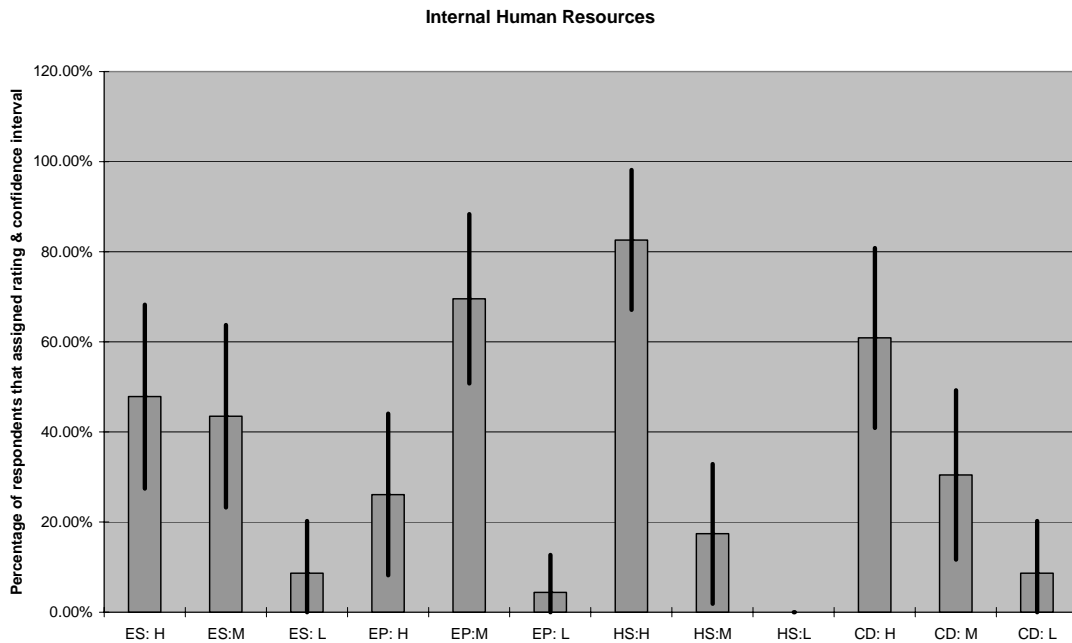


Figure 16-4: Internal Human Resources

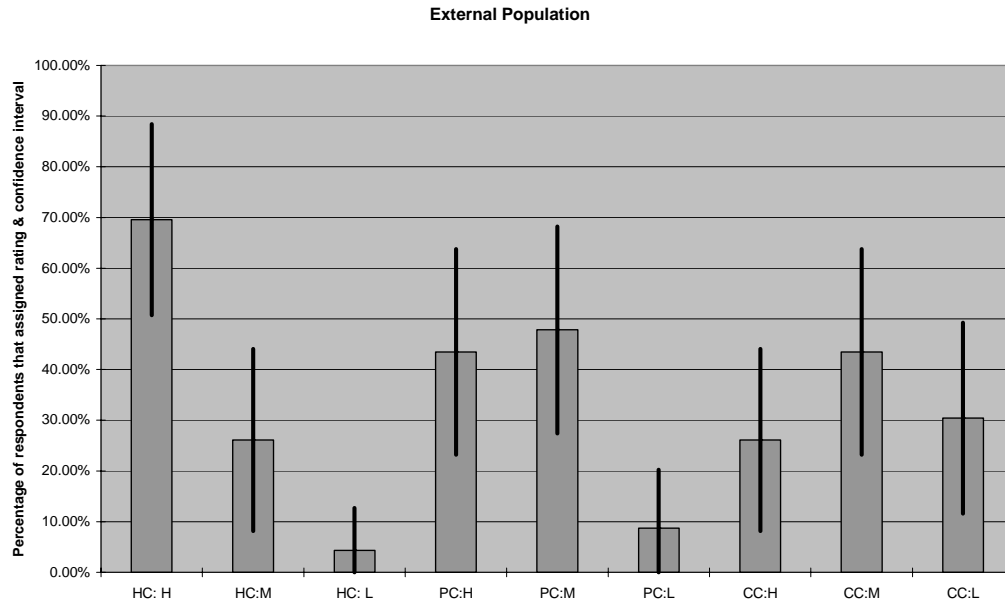


Figure 16-5: External Population

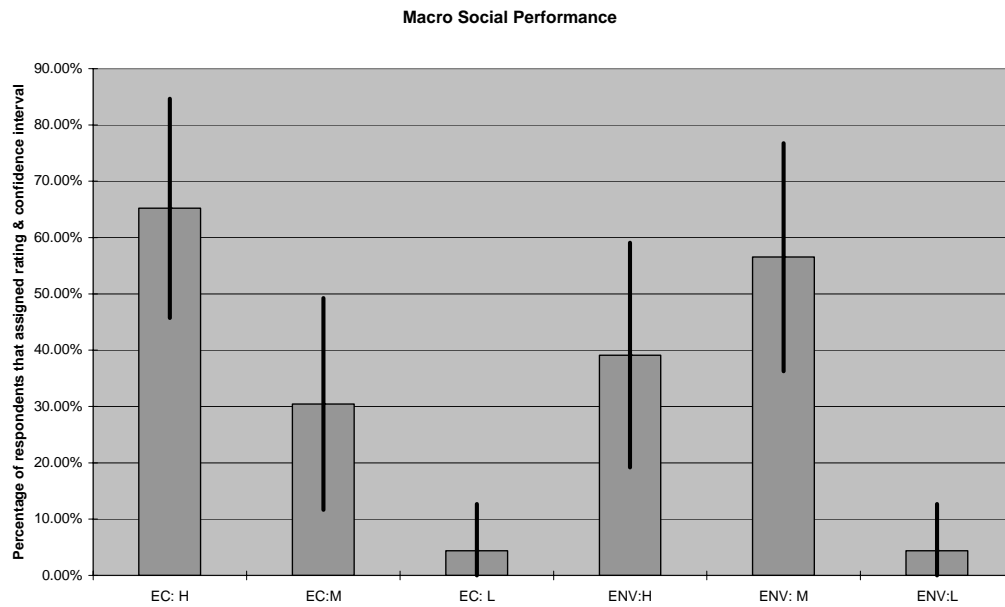


Figure 16-6: Macro Social Performance

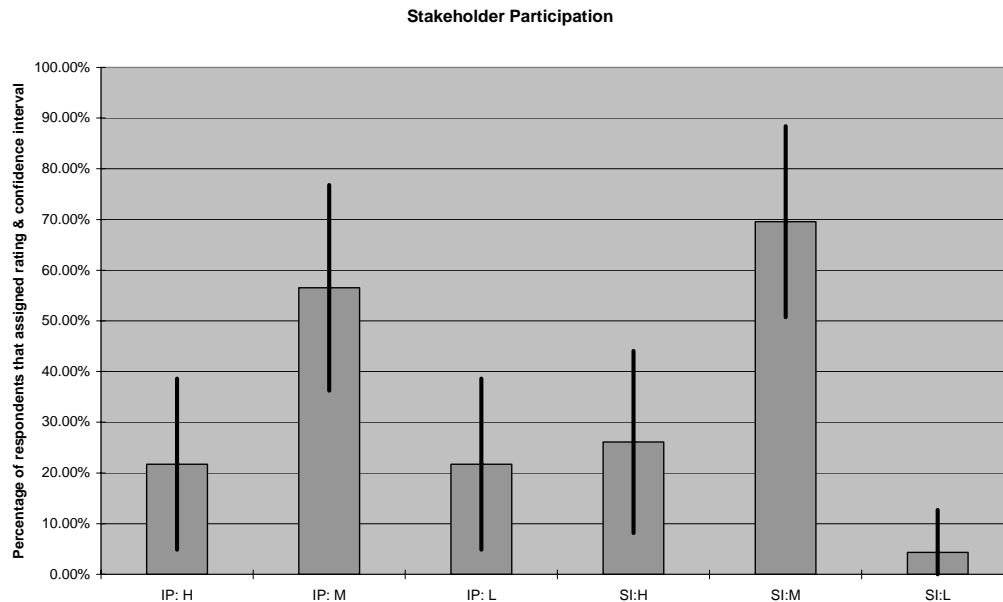


Figure 16-7: Stakeholder Participation

Table 16-1: Summary of 95% confidence levels of true proportions

Criterion	Relevance: High		Relevance: Medium		Relevance: Low	
	Response	Confidence Interval	Response	Confidence Interval	Response	Confidence Interval
Internal Human Resources	69.57%	50.76 < p < 88.37	26.09%	8.14 < p < 44.03	4.35%	0 < p < 12.68
External Population	56.52%	36.26 < p < 76.78	39.13%	19.18 < p < 59.07	4.35%	0 < p < 12.68
Stakeholder Participation	47.83%	27.41 < p < 68.24	47.83%	27.41 < p < 68.24	4.35%	0 < p < 12.68
Macro Social Performance	13.04%	0.00 < p < 26.81	78.26%	61.40 < p < 95.12	8.70%	0 < p < 20.21
Employment Stability	47.83%	27.41 < p < 68.24	43.48%	23.21 < p < 63.74	8.70%	0 < p < 20.21
Employment Practices	26.09%	8.14 < p < 44.03	69.57%	50.76 < p < 88.37	4.35%	0 < p < 12.68
Health & Safety	82.61%	67.12 < p < 98.10	17.39%	1.9 < p < 32.88	0.00%	N/A
Capacity Development	60.87%	40.92 < p < 80.81	30.43%	11.63 < p < 49.24	8.70%	0 < p < 20.21
Human Capital	69.57%	50.76 < p < 88.37	26.09%	26.09 < p < 44.04	4.35%	0 < p < 12.68
Productive Capital	43.48%	23.21 < p < 63.74	47.83%	27.41 < p < 68.24	8.70%	0 < p < 20.21
Community Capital	26.09%	8.14 < p < 44.03	43.48%	23.21 < p < 63.74	30.43%	11.63 < p < 49.23
Information Provision	21.74%	4.88 < p < 38.59	56.52%	36.26 < p < 76.78	21.74%	4.88 < p < 38.60
Stakeholder Influence	26.09%	8.14 < p < 44.03	69.57%	50.76 < p < 88.37	4.35%	0 < p < 12.68
Socio-Economic Performance	65.22%	45.75 < p < 84.68	30.43%	11.63 < p < 49.24	4.35%	0 < p < 12.68
Socio-Environmental Performance	39.13%	19.18 < p < 59.07	56.52%	36.26 < p < 76.78	4.35%	0 < p < 12.68

17. Appendix I: Indicators per criteria for each asset life cycle phase

The indicators listed are classified by the types of indicators. Based on the literature review of indicators, the classification framework (of Figure 17-1) is proposed for indicators and will be used to classify the indicators.

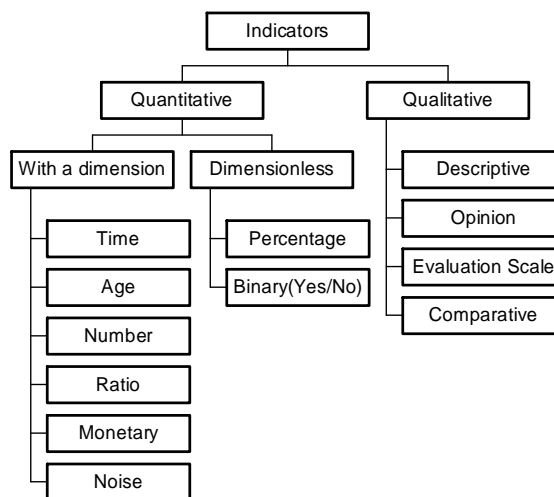


Figure 17-1: Classification System for Indicators

Unfortunately, all types of indicators cannot be used with the same ease and one of the major shortcomings of current indicator frameworks is the lack of clear and detailed guidance for indicator use, specifically on how to apply these indicators [IO]. Currently, quantitative indicators are preferred above qualitative indicators, since it is believed that it is easier to gather the necessary data for an impact assessment. However, the use of only quantitative indicators can turn out to be just another accounting exercise [IO]. The development of indicators should thus also look at the practicality thereof as well as at data availability to facilitate comparison. Criteria should never be excluded due to problems with indicator measurement or data availability. A more optimal approach is to find an indicator type that can easily be measured for the specific criteria and to

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

continuously strive to measure indicators in more detail, for example by moving from a binary indicator to a quantitative indicator with dimension or a qualitative indicator. The following table lists the criteria and associated indicators, the characteristic types of the indicators, and the life cycle phase where the indicators are applicable.

Criteria & Indicators	References	Type of Indicator	Design	C ⁴	Operation	D ⁵
1. Internal Human Resources						
Reputation of company as a desirable employer as measured by national surveys, employee surveys and job applicant feedback	[I1, I2]	Qualitative: Opinion			X	
Level of employee satisfaction relative to industry norms	[I1, I3, I4]	Quantitative or Qualitative		X	X	X
SA8000 certification	[I9]	Quantitative: Binary			X	
Does the company measure and control the long-term success of its human resource policies in a formal/standardised way?	[I4]	Quantitative: Binary			X	
1.1 Employment Stability						
Average duration of a contract	[I5]	Quantitative: Time		X	X	X
Average duration of employment	[I5]	Quantitative: Time		X	X	X
Retirement Age	[I6]	Quantitative: Age			X	
1.1.1 Employment Opportunities						
a) Breakdown of workforce by:						
• Status (employee/non-employee)	[I7]	Quantitative: Nr or Percentage		X	X	X

⁴ C= Construction

⁵ D= Decommissioning

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Type (full time/part time)	[I1,I7]	Quantitative: Number or Percentage		X	X	X
• Contract (indefinite/permanent/fixed term/temporary)	[I7]	Quantitative: Number or percentage		X	X	X
• Location	[I1,I7]	Quantitative: Number		X	X	X
• Salary Level	[I1,I7]	Quantitative: Number		X	X	X
b) New employees appointed:						
• Net employment creation	[I1, I7, I8, I9,I10]	Quantitative: Number		X	X	X
• Percentage of employees hired based on a validated selection test	[I4]	Quantitative: Percentage		X	X	
• New appointments as a percentage of number of direct employees	[I8]	Quantitative: Percentage			X	
c) Employees leaving the company:						
• Number of employees who have resigned or have been made redundant per year	[I8]	Quantitative: Number			X	X
• Total number of dismissals	[I9]	Quantitative: Number			X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Percentage of dismissals over 45 years of age compared to total number of dismissals 	[I9]	Quantitative: Percentage			X	X
<ul style="list-style-type: none"> Percentage of skilled employees that left the company in the course of the past year relative to the total average number of skilled employees 	[I4]	Quantitative: Percentage			X	X
<ul style="list-style-type: none"> Percentage of workforce that is systematically outplaced or re-assigned because of weak performance of the employee relative to the total average number of total workforce 	[I4]	Quantitative: Percentage			X	X
<ul style="list-style-type: none"> Does your company have policies covering redundancies? 	[I11]	Quantitative: Binary			X	
d) Other:						
Number of employees; can be expressed as full-time equivalents	[I8, I9, I12, I13, I14]	Quantitative: Number		X	X	X
Employee turnover (resigned + redundant/number employed) (can be compared to sector norms)	[I1, I3, I7, I8]	Quantitative: Percentage		X	X	X
What is the company's policy or preferences with regards to labour intensive processes versus technology intensive processes?		Qualitative: Descriptive	X	X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<p>Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:</p> <ul style="list-style-type: none"> • The company takes social considerations into account when dismissals are necessary, for example: <ul style="list-style-type: none"> ○ longer period of notice ○ compensation payments ○ redeployment ○ retaining of workers whose dismissal would have the worst consequences (e.g. single parents, persons with difficulty in finding new employment, etc.) ○ helping dismissed workers find new employment (putting them in contact with the employment service, advertising in the daily press or other forms of job placement, etc.). • The company takes special account of workers who for one reason or another are not fully able to cope with their jobs (e.g. by offering retraining, further training or redeployment in a different type of job). • The company organises work so that a number of jobs are reserved for workers who become chronically sick or disabled. • The company's efforts to retain disabled workers cover the main categories of the workforce. 	[I3]	Qualitative: Evaluation Scale			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always: <ul style="list-style-type: none"> • The company seeks to do all it can to ensure that older workers can continue as long as they want. For example by providing: <ul style="list-style-type: none"> ○ opportunities for working shorter hours ○ transfer to other tasks and responsibilities ○ further training. \ • The company offers work experience placements (e.g. for school pupils, apprentices, students, persons with disabilities, etc.). 	[I3]	Qualitative: Evaluation Scale			X	
1.1.2 <u>Employment Remuneration</u>						
Total Payroll Expenses, can subdivide into total wage expenses and total benefit expenses	[I8]	Quantitative: Monetary		X	X	X
Average Disability Pensions	[I6]	Quantitative: Monetary			X	X
a) Salaries/Wages:						
<ul style="list-style-type: none"> • Indicative wage and benefit package for highest-paid 10% and lowest-paid 10% of employees 	[I8]	Quantitative: Monetary		X	X	X
<ul style="list-style-type: none"> • Lowest wage paid per month in comparison with statutory minimum in country 	[I1, I2, I5, I9, I15]	Quantitative: Ratio		X	X	X
<ul style="list-style-type: none"> • Income + benefit ratio comparison between top 10% and bottom 10% or highest and lowest salary. 	[I5, I8, I9]	Quantitative: Ratio		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Does your company have policies covering wages? If yes, does it also address living wage? If yes, does it also address cash profit sharing?	[I11]	Quantitative: Binary		X	X	X
• What percentage of your company's employees is covered by these policies?	[I11]	Qualitative: Percentage		X	X	X
• How are these policies communicated (languages, availability etc.)?	[I11]	Qualitative: Descriptive		X	X	X
b) Employment Benefits:						
• Employment benefits beyond those legally mandated	[I4, I6]	Qualitative: Descriptive		X	X	X
• Benefits as percentage of payroll expense	[I8]	Qualitative: Percentage		X	X	X
• Percentage of company shares held by employees	[I9]	Qualitative: Percentage			X	
• Percentage of employees included in profit sharing programme	[I1, I4, I9]	Qualitative: Percentage			X	
• Percentage of employees included in Bonuses programme	[I4, I9]	Qualitative: Percentage			X	
• Does the company offer a:	[I9]	Quantitative: Binary		X	X	X
○ A family health plan						
○ Support for children's education						
○ Financing for purchasing of housing						

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Percentage of employees with medical insurance, paid leave and other benefits 	[I1]	Qualitative: Percentage		X	X	X
<ul style="list-style-type: none"> Comparison of benefits and hourly wages between full-time and part-time employees 	[I1]	Qualitative: Descriptive/ Quantitative: Ratio		X	X	X
1.2 Employment Practices						
Does your company publicly support the United Nations Universal Declaration on Human Rights?	[I4, I11]	Quantitative: Binary		X	X	X
Does your company publicly support any ILO conventions? If yes, please specify which ILO conventions.	[I4, I11]	Quantitative: Binary		X	X	X
Does your company have a management system covering human and labour rights? If yes, what percentage of employees is covered by this system?	[I11]	Quantitative: Binary and Percentage			X	
SA8000/ BS 8800 certification	[I9]	Quantitative: Binary			X	
Does your company conduct audits of human and labour rights activities? If yes:	[I11]	Quantitative: Binary		X	X	X
<ul style="list-style-type: none"> what percentage of your operations is audited? 	[I11]	Quantitative: Percentage		X	X	X
<ul style="list-style-type: none"> are these audit performed on a regular basis? 	[I11]	Quantitative: Binary		X	X	X
<ul style="list-style-type: none"> are these audits verified by a third party? 	[I11]	Quantitative: Binary		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making
Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
a) Work-Life:						
Does the company	[I9]	Quantitative: Binary			X	
<ul style="list-style-type: none"> • Offer a program of prevention and treatment of drug and alcohol addiction? • Encourage workout during working hours? 						
Existence of work-life programs such as flexitime, job sharing, telecommuting, child care, sabbaticals, and training; and percentage of employees participating in these programs relative to sector norms	[I1]	Quantitative: Binary and Percentage			X	
Other: Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:	[I3]	Qualitative: Evaluation Scale				
<ul style="list-style-type: none"> • The company has surveyed the requirements and possibilities for preventing persons outside the company from being excluded from the labour market (introducing jobs with flexible hours, work placements, supporting activities for young people in the local community, etc.). • Workers have a strong influence on working time. • Workers have a strong influence on the daily scheduling of working time. 					X	
Workers are able to work reduced hours or obtain leave in special situations (e.g. serious illness of close relatives).						

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:	[I3]	Qualitative: Evaluation Scale			X	
<ul style="list-style-type: none"> Workers have the company's support in taking up various leave opportunities. Workers have the company's support in taking up public office (e.g. local politics). Workers are able to pursue time consuming leisure interests (e.g. competitive sport). 						
<u>1.2.1</u> <u>Disciplinary & Security Practices</u>						
Description of appeal practices	[I7]	Qualitative: Descriptive		X	X	X
Description of non-retaliation policy and effective confidential employee grievance system	[I7]	Qualitative: Descriptive		X	X	X
<u>Security Personnel statistics:</u>						
<ul style="list-style-type: none"> Use of security personnel as required by law 	[I15]	Quantitative: Binary and Qualitative: Descriptive			X	
<ul style="list-style-type: none"> Number of armed company security, armed contractor security and armed government forces 	[I15]	Quantitative: Number				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Human rights training for security personnel	[I7]	Quantitative: Binary and Qualitative: Descriptive		X	X	X
1.2.2 Employee Contracts						
Clarity of contractual terms	[I16]	Qualitative: Opinion		X	X	X
a) Working Hours & Overtime:						
• Average working hours	[I13]	Quantitative: Time		X	X	X
• Average of overtime worked per employee per year	[I9]	Quantitative: Time		X	X	X
• Does the company have a compensation and overtime policy for managers and executives?	[I9]	Quantitative: Binary		X	X	X
b) Freedom of Association and Collective Bargaining:						
• Percentage of employees represented by independent trade union organisations or other bona fide employee representatives	[I7, I15]	Quantitative: Percentage		X	X	X
• Percentage of employees covered by collective bargaining agreements broken down by region/country	[I7, I15]	Quantitative: Percentage		X	X	X
• Description of freedom of association policy and extent to which this policy is universally applied independent of local laws, as well as description of procedures/programmes to address this issue	[I7, I16]	Qualitative: Descriptive		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Does your company have policies that cover Freedom of association and collective bargaining? Please also indicate the percentage of your company's employees covered by these policies. 	[I11]	Quantitative: Binary and Percentage				
<u>1.2.3 Equity & Diversity</u>						
a) Equity:						
<ul style="list-style-type: none"> Ratio of average female wage to average male wage 	[I17]	Quantitative: Ratio		X	X	X
<ul style="list-style-type: none"> Description of equal opportunity policies or programmes as well as monitoring systems to ensure compliance and results of monitoring 	[I7]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Description of global policy and procedures/programmes preventing all forms of discrimination in operations, including monitoring systems and results of monitoring 	[I7]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Number of plants with equal opportunity policies 	[I15]	Quantitative: Number			X	
<ul style="list-style-type: none"> Does your company have policies that cover the Discrimination? Please also indicate the percentage of your company's employees covered by these policies. 	[I11]	Quantitative: Binary and Percentage		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Does the company: <ul style="list-style-type: none"> • support community projects that aim to improve the competitiveness of groups which commonly encounter discrimination in the labour market? • have a special program for hiring physically and mentally disabled people? • offer work opportunities for former prison inmates? • have a policy of giving preference in hiring processes to individuals over 45 years of age or those who have been unemployed for over 2 years? • have effective guidelines and processes to combat sexual harassment? 	[I9]	Quantitative: Binary			X	
Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always: <ul style="list-style-type: none"> • The company has surveyed the requirements and possibilities for helping persons <i>outside</i> the company enter the labour market (recruiting persons with disabilities, other ethnic backgrounds, etc.). • The company endeavours to ensure a broad mix of workers in terms of e.g. gender, age, ethnic background etc. when recruiting. 	[I3]	Qualitative: Evaluation Scale			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always: <ul style="list-style-type: none"> The company considers whether vacancies or new tasks can be filled by persons with disabilities. The company is in constant contact with the employment service and the local authority with a view to whether the company can offer employment to disadvantaged persons. Personnel composition (e.g. training, age, gender, seniority) corresponds to the company's objectives 	[I3]	Qualitative: Evaluation Scale			X	
b) Diversity:						
<ul style="list-style-type: none"> Composition of senior management and corporate governance bodies (including the board of directors): female/male ratio and other indicators of diversity as culturally appropriate 	[I7]	Quantitative: Ratio			X	
<ul style="list-style-type: none"> <i>Gender diversity:</i> Percentage women in supervisory/professional positions, management positions, senior leadership positions; all of the above by race or percentage of workforce by gender type. 	[I9, I11, I12, I13, I15]	Quantitative: Percentage		X	X	X
<ul style="list-style-type: none"> <i>Minority Groups:</i> Numbers, percentage, and lengths of service of women and minorities: in senior management and on the board; interviewed, employed, and promoted by job category; earning above industry and/or local averages; and completing special training programs 	[I1]	Quantitative: Number, percentage and time		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> • <i>Regional diversity</i>: Percentage of country chair positions for which suitably qualified local nationals exist or percentage of senior leadership staff (management staff) by nationality 	[I12, I15]	Quantitative: Percentage			X	
<ul style="list-style-type: none"> • <i>Age</i>: Percentage of employees over 45 years of age out of the total number of employees or percentage of employees by age groups 	[I9, I12]	Quantitative: Percentage		X	X	X
<ul style="list-style-type: none"> • <i>Disadvantaged Groups</i>: Percentage of previously disadvantaged groups in management and workforce 	[I14]	Quantitative: Percentage		X	X	X
<ul style="list-style-type: none"> • Does your company have policies covering workforce diversity? 	[I11]	Quantitative: Binary		X	X	X
<u>1.2.4 Labour Sources</u>						
a) Child Labour						
<ul style="list-style-type: none"> • Description of policy excluding child labour as defined by the ILO Convention 138 and extent to which this policy is visibly stated and applied, as well as description of procedures/ programmes to address this issue, including monitoring systems and results of monitoring 	[I7, I9, I13, I15]	Qualitative: Descriptive	X	X	X	X
<ul style="list-style-type: none"> • How these policies are pushed in the supply chain. 	[I9, I15]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> • Number of assessment filed by the Labour Ministry for using child labour in the period 	[I9]	Quantitative: Number		X	X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Does your company have policies that cover child labour? Please also indicate the percentage of your company's employees covered by these policies. 	[I11]	Quantitative: Binary and Percentage	X	X	X	X
b) Forced Labour:						
<ul style="list-style-type: none"> Description of policy to prevent forced and compulsory labour and extent to which this policy is visibly stated and applied as well as description of procedures/programmes to address this issue, including monitoring systems and results of monitoring 	[I7]	Qualitative: Descriptive	X	X	X	X
<ul style="list-style-type: none"> Does your company have policies that cover forced labour? Please also indicate the percentage of your company's employees covered by these policies. 	[I11]	Quantitative: Binary and Percentage	X	X	X	X
c) Other:						
<ul style="list-style-type: none"> What are the major human and labour rights challenges in your industry? 	[I11]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Does your company have policies that cover indigenous people's rights? Please also indicate the percentage of your company's employees covered by these policies. 	[I11]	Quantitative: Binary and Percentage	X	X	X	X
<ul style="list-style-type: none"> Percentage of employees sourced from local communities relative to the total number of employees. 	[I2]	Quantitative: Percentage		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators		References	Type of Indicator	Design	C	Operation	D
1.3	<u>Health & Safety</u>						
	Fines, penalties and settlements: number thereof and amount spent	[I14]	Quantitative: Number and Monetary			X	
1.3.1	<u>Health & Safety Practices</u>						
	a) Procedures, practices and systems						
	<ul style="list-style-type: none"> Practices on recording and notification of occupational accidents and diseases, and how they relate to the ILO Code of Practice on Recording and Notification of Occupational Accidents and Diseases 	[I7]	Qualitative: Descriptive		X	X	X
	<ul style="list-style-type: none"> Evidence of substantial compliance with the ILO <i>Guidelines for Occupational Health Management Systems</i>. 	[I7]	Qualitative: Descriptive		X	X	X
	<ul style="list-style-type: none"> Description of formal joint health and safety committees comprising management and worker representatives and proportion of workforce covered by any such committees 	[I7]	Qualitative: Descriptive		X	X	X
	<ul style="list-style-type: none"> Exposure of employees to hazardous and potentially hazardous substances and conditions 	[I1]	Qualitative: Descriptive		X	X	X
	<ul style="list-style-type: none"> Number of Certifications held e.g. ISO 14000, OHSAS 18001, Rating on NOSA 5 star system 	[I14]	Quantitative: Number			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Does your company have a written OHS policy? If yes, how is this policy communicated to employees (e.g. is it communicated in local languages, how it is made available)? 	[I11]	Quantitative: Binary and Qualitative: Descriptive			X	
<ul style="list-style-type: none"> Does your company have a management system covering OHS? If yes, is this system in accordance with the ILO Guidelines for Occupational Health Management Systems and what percentage of your employees is covered by this system? 	[I11]	Quantitative: Binary and Qualitative: Descriptive and Quantitative: Percentage			X	
b) Agreements, audits, training, prevention actions and disaster preparedness						
<ul style="list-style-type: none"> Description of formal agreements with trade unions or other bona fide employee representatives covering health and safety at work and the proportion of the workforce covered by any such agreements 	[I7]	Qualitative: Descriptive and Percentage		X	X	X
<ul style="list-style-type: none"> Does your company conduct audits of its OHS activities? If yes: <ul style="list-style-type: none"> what percentage of your operations is audited? are these audits performed on a regular basis? are these audits verified by a third party? 	[I11]	Quantitative: Binary & Percentage		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Results of third party audits	[I16]	Qualitative: Descriptive		X	X	X
• Number and percentage of employees attending safety education classes	[I1]	Quantitative: Number and Percentage		X	X	X
• How is OHS training given to employees (e.g. frequency, topics, number of employees covered)?	[I11]	Qualitative: Descriptive and Quantitative: Number		X	X	X
• Percentage of the hours of training regarding health and safety relative to the total number of hours worked	[I2]	Quantitative: Percentage		X	X	X
• Description of policies or programmes (for the workplace and beyond) on HIV/AIDS	[I7]	Qualitative: Descriptive		X	X	X
• Expenditure on illness and accident prevention as a percentage of payroll expense	[I8]	Quantitative: Monetary and Percentage		X	X	X
• Disaster Preparedness:	[I18]	Quantitative: Percentage, and		X	X	X
○ Share of employees trained in First Aid						
○ Expenditures for disaster prevention						
○ Frequency of risk assessments and contingency plans in business		Monetary, and Number.				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Adequacy of disaster planning/response 	[I16]	Qualitative: Opinion			X	
<p>c) Other: Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:</p> <ul style="list-style-type: none"> The company has surveyed the requirements and possibilities for preventing workers in the company from being excluded from the labour market (prevention of sickness, poor health, etc.). The company has surveyed the requirements and possibilities for helping workers likely to be excluded from the labour market. The company provides active assistance when workers become seriously ill, suffer a personal crisis or similar. The company provides rehabilitation facilities, gradual reintegration, etc. The company offers to pay treatment at private clinics or provide other forms of financial support. The company provides all workers with full pay when sick. The company cooperates with the local authority with regards to workers registered as long-term incapacitated. 	[I3]	Qualitative: Evaluation Scale			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<u>1.3.2 Health & Safety Incidents</u>						
a) Lost days/ Absenteeism:						
• Lost days rate	[I7]	Quantitative: Ratio		X	X	X
• Absentee rate	[I7]	Quantitative: Ratio		X	X	X
• Level of absenteeism relative to industry norms	[I1,I3]	Quantitative: Ratio		X	X	X
• Working hours lost through absence (can express as Percentage of total working hours)	[I5,I8]	Quantitative: Time or Percentage		X	X	X
• Lost time accident frequency (number per million hours worked)	[I8]	Quantitative: Ratio		X	X	X
• Lost time injury frequency (Injury hours per million exposure hours)	[I1, I11, I15, I19]	Quantitative: Ratio		X	X	X
Percentage of accidents that resulted in:	[I9]	Quantitative: Percentage		X	X	X
• Temporary leave of absence of employee(s)/ service provider(s)						
• Injury or other physical damages to employee(s)/ service provider(s)						
• Permanent disability leave (including repetitive strain injuries)						
b) Cases and Accidents:						
• Injury and Illness rate (can be expressed per x number of working hours)	[I7,I12]	Quantitative: Ratio		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Total reportable occupational illness frequency (per x number of working hours)	[I14,I15]	Quantitative: Ratio		X	X	X
• Total reportable case frequency (Injury hours per million exposure hours)	[I15]	Quantitative: Ratio		X	X	X
• Average annual number of work accidents per employee	[I9]	Quantitative: Ratio			X	
• Number of accidents by type	[I1,I16]	Quantitative: Number		X	X	X
• Transportation incidents	[I12,I14]	Quantitative: Number or ratio		X	X	X
• Process Safety: Number of fires, explosions and releases; leaks, breaks and spills	[I14]	Quantitative: Number		X	X	X
c) Fatalities:						
• Percentage of accidents that resulted in death of employee(s)/ service provider(s)	[I9]	Quantitative: Percentage		X	X	X
• Number of work-related fatalities (including subcontracted workers)	[I7, I12,I14, I15,I19]	Quantitative: Number		X	X	X
• Fatal accident rate (number of fatalities per x million exposure hours)	[I15,I19]	Quantitative: Ratio		X	X	X
• Fatality rate (number of fatalities per number of employees per year)	[I11]	Quantitative: Ratio		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
d) Compensation:						
• Number of compensated occupational diseases	[I2]	Quantitative: Number		X	X	X
• Expenditure on workers compensation relative to sector	[I1]	Quantitative: Monetary		X	X	X
1.4 Capacity Development						
Is formal organizational learning/knowledge management systems in place in the company and what percentage of employees are involved in them?	[I4]	Quantitative: Binary			X	
1.4.1 Research & Development						
• Expenditure on Research and Development as a percentage of GDP ⁶	[I17]	Quantitative: Percentage		X	X	
• R & D expenditure as percentage of sales	[I8]	Quantitative: Percentage			X	
• Percentage of research expenditure for sustainability	[I18]	Quantitative: Percentage		X	X	
• Percentage of GDP spent on environment and development policies ⁶	[I18]	Quantitative: Percentage			X	
• Description of R&D process to develop ideas into sustainable business opportunities.		Qualitative: Descriptive	X		X	

⁶Note indicator has been developed for a nation; it can be adapted for business by using turnover instead of GDP.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<u>1.4.2 Career Development</u>						
a) Training:						
• Average hours of training per year per employee by category of employee	[I1, I5, I7, I9, I12]	Quantitative: Time or Ratio			X	
• Total training expenses	[I8]	Quantitative: Monetary		X	X	X
• Training expenses as percentage of payroll expenses	[I8]	Quantitative: Percentage		X	X	X
• Training and career planning cost per employee	[I1]	Quantitative: Monetary Ratio			X	
• Training costs per hour	[I12]	Quantitative: Monetary Ratio		X	X	X
• Number of employees participating in training	[I1]	Quantitative: Number		X	X	X
• Percentage of employees for whom there is a company training program, specific to their job category which must be taken before or within a definite time period after taking their position	[I4]	Quantitative: Percentage			X	
• Frequency of training	[I16]	Quantitative: Ratio		X	X	X
b) Human Rights Training:						
• Employee training on policies and practices concerning all aspects of human rights relevant to operations	[I7]	Qualitative: Descriptive		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> • Does your company provide information/training concerning human rights and labour rights to your employees? If yes: <ul style="list-style-type: none"> ○ what percentage of your employees receives such information/training? ○ in which languages is this information/training given? ○ what is the nature of this information/training? 	[I11]	Quantitative: Binary & Percentage Qualitative: Descriptive		X	X	X
c) Employability & Career Planning:						
<ul style="list-style-type: none"> • Description of programmes to support the continued employability of employees and to manage career endings 	[I7]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> • Specific policies and programmes for skills management or for lifelong learning 	[I7]	Qualitative: Descriptive		X	X	
<ul style="list-style-type: none"> • Percentage of total revenue spent on professional development and education 	[I9]	Quantitative: Percentage			X	
<ul style="list-style-type: none"> • Percentage of employee development goals achieved 	[I1, I3]	Quantitative: Percentage			X	
<ul style="list-style-type: none"> • Does your company have policies covering employee career plans? 	[I11]	Quantitative: Binary			X	
<ul style="list-style-type: none"> • Does the company <ul style="list-style-type: none"> ○ maintain a program for eliminating illiteracy for its employees, with established goals and resources? ○ maintain a program of basic or continuing education? 	[I9]	Quantitative: Binary			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<p>d) Other:</p> <p>Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:</p> <ul style="list-style-type: none"> • The company provides alternative employment or further training for workers in connection with readjustments occasioned by new technology, organisational changes, etc. • The company endeavours to retain workers through fluctuations in the company's level of activity (e.g. by making use of slack periods to train workers). • The company plans the development and training of workers to ensure they remain employable on the labour market. • The company trains its supervisors, worker representatives and personnel staff so that they can promote the development of workers/colleagues. • The company coordinates workers' training and development needs with company plans so that workers always have the right qualifications for remaining in the company 	[I3]	Qualitative: Evaluation Scale			X	X

Sustainable project life cycle management: Development of social criteria for decision-making
Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
e) Promotions & Appraisals:						
• Number of direct employees promoted	[I8]	Quantitative: Number			X	
• Promotion rate (the number of promotions as a percentage of the number employed)	[I8]	Quantitative: Ratio			X	
• Percentage of promotions that are internal	[I1]	Quantitative: Percentage			X	
• Number of promotions by type of job and salary level	[I1]	Quantitative: Number			X	
• Percentage of skilled employees and executives receiving a regular (e.g. a least once per year) formal evaluation of their performance (performance appraisal)	[I4]	Quantitative: Percentage			X	
• Describe how senior/middle management is appraised	[I4]	Qualitative: Descriptive		X	X	X
f) Level of knowledge within company:						
• Percentage of employees with post school qualification	[I8]	Quantitative: Percentage		X	X	X
• Average duration of school, university or other educational enrolment amongst employees	[I5]	Quantitative: Number		X	X	X
• Number of employees that are financially sponsored by the company for further education	[I2]	Quantitative: Number			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Does the company have a medium-term workforce and skills plan comparing current employees and their skills with the future number, type and skills of employees required to execute the business plan? 	[I4]	Quantitative: Binary			X	
2. External Population						
<ul style="list-style-type: none"> Social and recreational benefits provided to community 	[I1]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Hours of community relationship-building training and number of employees trained 	[I1]	Quantitative: Time and Number		X	X	X
<ul style="list-style-type: none"> Number and percentage of employees, including top management, who participate in company-sponsored volunteer activities on their own and company time 	[I1]	Quantitative: Number and Percentage		X	X	X
<ul style="list-style-type: none"> Number and type of community activities held on company property 	[I1]	Quantitative: Number and Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Community awards, accolades received, and assessment of impact of charitable contributions 	[I1]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Number of proposed developments that require resettlement of communities 	[I2]	Quantitative: Number		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Amount of money spend and percentage of profits and/or in-kind resources donated to improve the quality of life in community 	[I1]	Quantitative: Monetary and Percentage			X	
<ul style="list-style-type: none"> Does your company evaluate its impacts on the local communities in which it operates? If yes, which topics are included in this evaluation and which stakeholder groups are involved? 	[I11]	Quantitative: Binary and Qualitative: Descriptive		X	X	X
<p>Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:</p> <ul style="list-style-type: none"> The company is in constant contact with others in the local community regarding persons with disabilities or tenuous links with the labour market The company cooperates with training institutions (labour market training providers, vocational colleges and schools). The company participates in networks/exchanges of experience with other companies. The company offers persons specially adapted jobs (on-the-job training, flexible jobs, sheltered work, under the social chapter, etc.). The company supports activities in the (local) community (e.g. leisure activities, sport, culture, etc.). 	[I3]	Qualitative: Evaluation Scale		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
c) Other:						
• Total health spending per area	[I6, I23]	Quantitative: Monetary	Does not assess company's impact or contribution			
• HIV Infection rates	[I23]	Quantitative: Ratio				
• Total number of health and safety complaint from local communities to the company or Indicators of health conditions or illnesses due to pollutions	[I2, I23]	Quantitative: Number or Qualitative: Descriptive		X	X	X
2.1.2 Education						
a) Children						
• Children reaching Grade 5 of Primary Education	[I17, I20]	Quantitative: Nr or Percentage				
• Public education expenditure	[I6]	Quantitative: Monetary	All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition.			
• Enrolment rate for primary, secondary and tertiary education institutions (if applicable)	[I20, I23]	Quantitative: Ratio				
• Pupil-teacher ratio	[I23]	Quantitative: Ratio				
• Number of schools per 1000 people	[I22, I23]	Quantitative: Number or Ratio				
• Percentage of matriculates successful per year	[I23]	Quantitative: Percentage				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Number of children in primary, secondary and tertiary education institutions as percentage of school age population	[I23]	Quantitative: percentage				
• Gender equality in education for all the relevant indicators	[I20]	Quantitative: Percentage or Qualitative: Comparative				
• Age children leave school	[I22]	Quantitative: Age				
b) Adults & Community Indexes						
• Adult secondary Education Achievement Level	[I17]	Qualitative: Descriptive				
• Adult Literacy Rate	[I17, I20, I23]	Quantitative: Ratio				
• Percentage of literacy and related indexes	[I21]	Quantitative: Percentage				
• Percentage of 25-64 year olds with a vocational or higher education qualification	[I6]	Quantitative: Percentage				
• Opportunities for training for community residents	[I1]	Qualitative: Descriptive		X	X	X
• Support for community education programmes: level of investment in either monetary terms or time	[I16]	Quantitative: Monetary and/or Time			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators		References	Type of Indicator	Design	C	Operation	D
2.2	Productive Capital						
2.2.1	<u>Housing</u>						
	• Floor area per person or per capita	[I17, I23]	Quantitative: Ratio				
	• Area of urban zones	[I6]	Quantitative: Number or square kilometres				
	• Expansion of urban edge	[I23]	Quantitative: Kilometres				
	• Average household size	[I23]	Quantitative: Number				
	• Percentage of population with adequate housing	[I23]	Quantitative: Percentage				
	• Nature of home occupancy – rent, own, etc.	[I22]	Qualitative: Comparative				
	• Availability of rental accommodation	[I22]	Qualitative: Descriptive or Quantitative: Number				
2.2.2	<u>Service Infrastructure</u>						
	• Percentage of population with adequate sewage disposal	[I17, I20, I23]	Quantitative: Percentage				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Percentage of population with access to safe drinking water or with public taps, piped water at dwelling, piped on site 	[I17, I20, I23]	Quantitative: Percentage				
<ul style="list-style-type: none"> Percentage of households without electricity 	[I21]	Quantitative: Percentage				
<ul style="list-style-type: none"> Company strategy with regards to the use of community service infrastructure 		Qualitative: Descriptive	X	X	X	X
<ul style="list-style-type: none"> Percentage of the population with access to electricity, gas, candles, wood 	[I23]	Quantitative: Percentage				
<ul style="list-style-type: none"> Trends in: energy consumption, water consumption and waste amounts in dwellings/households 	[I6]	Qualitative: Comparative				
<ul style="list-style-type: none"> Infrastructure expenditure per capita 	[I6]	Quantitative: Ratio				
<ul style="list-style-type: none"> Telephones: <ul style="list-style-type: none"> Main telephone lines per 1000 inhabitants 	[I17]	Quantitative: Number or Ratio				
<ul style="list-style-type: none"> Telephones: <ul style="list-style-type: none"> Telephones per 1000 inhabitants 	[I21]	Quantitative: Number or Ratio				
<p>All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.</p>						
<p>2.2.3 <i>Mobility Infrastructure</i></p> <p>a) Journeys & Distances:</p>						
<ul style="list-style-type: none"> Average journey length by purpose 	[I6]	Quantitative: Time				
<ul style="list-style-type: none"> Distance travelled relative to income 	[I6]	Quantitative: Ratio				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Average distance per capita to key amenities and facilities	[I23]	Quantitative: Ratio				
• Annual change in average trip time	[I23]	Quantitative: Time				
b) Traffic Status:						
• Traffic congestion	[I6]	Qualitative: Descriptive				
• Vehicles per 1000 population	[I23]	Quantitative: Ratio				
• Mode of travel to/from work	[I23]	Qualitative: Descriptive				
c) Public Transport:						
• Annual income derived from public transport services	[I23]	Quantitative: Monetary				
• Public transport seats (number of seats per 1000 inhabitants)	[I23]	Quantitative: Number or Ratio				
d) Cargo:						
• Total tonnage of cargo moved per annum	[I23]	Quantitative: Ratio				
• Numbers of containers moved as a proportions of capacity	[I23]	Quantitative: Ratio				
• Company policy with regards to the use of public roads or public transport systems for cargo transport		Qualitative: Descriptive	X	X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
2.2.4 Regulatory & Public Services						
a) Politics:						
• Percentage of households registered to vote	[I21]	Quantitative: Percentage				
• Percentage of population voting in elections	[I21]	Quantitative: Percentage				
• Number of active political parties	[I23]	Quantitative: Nr				
• Membership numbers of political parties	[I23]	Quantitative: Nr & Qualitative: Comparative				
b) Information Availability:						
• Access to info e.g. library loans, internet users etc	[I6]	Qualitative: Descriptive				
• Number of Public libraries and users	[I6, I22]	Quantitative: Number				
• Number of Post Offices	[I22]	Quantitative: Number				
c) Other:						
• Number of Banks	[I22]	Quantitative: Number				
• Number of Community centres/Halls	[I22]	Quantitative: Number				

All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Number of Youth Centres/Child care centres and Family Day care programs Number of swimming pools 	[I22] [I22]	Quantitative: Number Quantitative: Number	Indicator does not access company's impact. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.			
d) Company:						
<ul style="list-style-type: none"> Did the company have its name cited in the press as being suspected of participating in an incident involving the offer of bribes and corruption of public officials? Does your company disclose its contributions to political organisations? Reported cases of bribery – offered by or accepted by company or intermediaries Number of political payments 	[I9] [I11] [I15] [I9, I15]	Quantitative: Binary Quantitative: Binary Quantitative: Number Quantitative: Number		X X X X	X X X X	X X X X
2.3 Community Capital						
Quality of Life	[I6]	Qualitative: Opinion or Descriptive	All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition.			
2.3.1 Sensory Stimuli						
<ul style="list-style-type: none"> Noise level 	[I6]	Quantitative: Decibel				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Carbon dioxide emissions per capita	[I20]	Quantitative: Ratio	Does not assess the company's contribution			
• Has the company received complaints and expressions of concern (petitions, formal requests, protests) made by the community because of:	[I9]	Quantitative: Binary		X	X	X
○ excessive garbage, emission of foul odours and other forms of pollution?				X	X	X
○ excessive vehicular traffic, causing noise and annoyance?				X	X	X
○ interference in communications systems?				X	X	X
<u>2.3.2 Security</u>						
• Number of recorded crimes per 100 000 inhabitants	[I17, I23]	Quantitative: Ratio				
• Level of crime and Fear of crime	[I6]	Quantitative: Ratio and Qualitative: Opinion				
• Incidents of violent crime, property related crime and social fabric crime	[I23]	Quantitative: Nr				
• Number of security personnel per 10 000 of population	[I23]	Quantitative: Ratio				
• Number of convictions as a percentage of total number of arrests	[I23]	Quantitative: Percentage				
• Number of Police Officers in community	[I22]	Quantitative: Number				
			All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.			

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
2.3.3 Cultural Properties						
• Description of policies, guidelines and procedures to address the needs of indigenous people	[I7]	Qualitative: Descriptive		X	X	X
• Cultural heritage: meadows and pastures; visits to museums; age structure of buildings	[I6]	Quantitative: Nr or Qualitative: Descriptive	Assess existence and not company's impact.			
2.3.4 Economic Welfare						
a) Community Characteristics:						
• Percentage of Population living below Poverty Line	[I17, I20, I21, I23]	Quantitative: Percentage				
• Unemployment Rate	[I17, I22, I23]	Quantitative: Ratio				
• Average income per household per area per race	[I22, I23]	Quantitative: Monetary Ratio				
• Total income per area based on average earned per household by population group	[I23]	Quantitative: Monetary				
• Motor vehicle ownership	[I22]	Quantitative: Number				
• Distribution of Wealth	[I22]	Qualitative: Descriptive or Quantitative: Percentages				
			All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.			

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
b) Company Impacts:						
• Share of operating revenues from the area of operations that are redistributed to local communities	[I7]	Quantitative: Percentage			X	
• Ratio of indirect jobs per number of direct employees	[I8]	Quantitative: Ratio		X	X	X
• Indirect community benefit per unit value added	[I8]	Quantitative: Monetary Ratio		X	X	X
• Contracting an procurement in local communities, Comparison between \$000 million spend outside country; inside the country: international contractors and suppliers; local contractors (in community)	[I15]	Qualitative: Comparative		X	X	X
• Percentage of the companies local suppliers relative to the total number of suppliers	[I2]	Quantitative: Percentage		X	X	X
• Nature and magnitude of public/private partnerships	[I1]	Qualitative: Descriptive		X	X	X
• Long-term commitment to community investment	[I16]	Qualitative: Descriptive			X	
c) Changes in Economic Opportunities:						
• Change in economic opportunities: number of newly registered businesses, vulnerability index, dependency ratio	[I23]	Quantitative: Nr or Qualitative: Comparative	All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence..			

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Net gain/loss in local jobs, income and/or business opportunities over time Increase in local retail sales and savings Presence of business incubators, business enterprise centres, Co-operatives, Skills Centres, regional economic development contracts 	[I1] [I10] [I22]	Quantitative: or Monetary Monetary Quantitative: Binary Qualitative: Descriptive	Nr or or			All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.
<p>2.3.5 Social Pathologies</p> <ul style="list-style-type: none"> Daily smokers & Obesity Alcohol and drug related illnesses HIV Infections Suicides Teenage pregnancy: number of pregnancies of 15 and 15-19 year old girls Child Abuse 	[I6] [I6, I22] [I6, I20] [I6] [I20] [I22]	Quantitative: Number or Qualitative: Comparative Quantitative: Qualitative: Descriptive or Comparative	or or or			All indicators can be assessed in the different phases, but the indicators assess conditions in the community and does not directly measure the company's contribution or influence on the condition. It is possible to assess indicator before and after construction for example but one would still not necessarily be able to isolate the company's contribution or impact.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Domestic Violence	[I22]					
• Separation and Divorce Rates	[I22]	Quantitative: Ratio				
2.3.6 Social Cohesion						
a) Population Characteristics						
• Population growth rate (can be per annum)	[I17, I23]	Quantitative: Ratio				
• Population of urban formal and informal settlements	[I17, I22, I23]	Quantitative: Number				
• Population: density and growth rate	[I21, I22]	Quantitative: Ratio				
• Urban/rural population distribution	[I21, I23]	Quantitative: Number or Qualitative: Comparative				
b) Changes or Migration:						
• Annual population change	[I6]	Quantitative: Number				
• Internal migration	[I6]	Quantitative: Number				
• Net migration rate	[I22, I23]	Quantitative: Ratio				
• Change in demographic structure of population: age, gender, racial grouping, cultural diversity	[I23]	Qualitative: Comparative				
• Percentage of sites (in the company) with “fly-in, fly-out” operations relative to the total number of sites	[I2]	Quantitative: Percentage		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Presence of seasonal workers	[I22]	Quantitative: Binary and/or Number		X	X	X
• Presence of Active social/professional/trade/volunteer organizations	[I22]	Quantitative: Binary		X	X	X
• Community Opinion	[I24]	Qualitative: Opinion		X	X	X
3. Macro Social Performance						
3.1 Socio-Economic Performance						
3.1.1 Economic Welfare						
• Contracting an procurement in local communities, Comparison between \$000 million spent outside country and inside the country: international contractors and suppliers; local contractors (national)	[I15]	Qualitative: Comparative		X	X	X
• Shareholders: dividends per change in net worth	[I9]	Quantitative: Ratio			X	
• Taxes paid to governments in total and by region	[I9, I12, I13, I19]	Quantitative: Monetary		X	X	X
• Total Purchases: Percentages by region	[I12]	Quantitative: Percentage		X	X	X
• Shareholders by region	[I19]	Quantitative: Number			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Distribution of benefits arising from economic activity: suppliers, employees, dividends, taxes and interest 	[I19]	Quantitative: Percentage		X	X	X
3.1.2 Trading Opportunities						
<ul style="list-style-type: none"> Joint ventures/Contract divested due to operations incompatible with business principles 	[I15]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Competition cases 	[I15]	Quantitative: Nr or Qualitative: Descriptive			X	
<ul style="list-style-type: none"> Has the company already been charged or sued for unfair competition practices? 	[I9]	Quantitative: Binary			X	
3.2 Socio-Environmental Performance						
3.2.1 Monitoring						
<ul style="list-style-type: none"> Number of company monitoring stations that provide information to the government 		Quantitative: Nr			X	
<ul style="list-style-type: none"> What contribution does the company make to the environmental monitoring capabilities (i.e. systems or techniques or experts) of the country or region? 		Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Are company resources (e.g. people, time, equipment, money) made available to assist with national or regional monitoring? What are the company's strategy with regards to assisting government with monitoring? 		Quantitative: Binary or Qualitative: Descriptive	X	X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
3.2.2 Legislation						
<ul style="list-style-type: none"> Are company resources (e.g. people, time, equipment, money) made available to participate in the legislation development or adaptation processes of government? 		Quantitative: Binary or Qualitative: Descriptive		X	X	X
3.2.3 Enforcement						
<ul style="list-style-type: none"> Number of suppliers with ISO 14000 accreditation 		Quantitative: Nr		X	X	X
<ul style="list-style-type: none"> Number of suppliers who are regularly audited to ensure environmental stewardship 		Quantitative: Nr		X	X	X
<ul style="list-style-type: none"> Description of initiatives to enforce environmental sustainability within the supply chain 		Qualitative: Descriptive		X	X	X
4. Stakeholder Participation						
4.1 Information Provisioning						
Clarity and accessibility of information disclosed (as from stakeholder group perspective)	[I16]	Qualitative: Opinion and Descriptive		X	X	X
4.1.1 Collective Audience						
<ul style="list-style-type: none"> Number of meeting with external stakeholders concerning company operations per year 	[I8]	Quantitative: Number		X	X	X
<ul style="list-style-type: none"> Number of stakeholder meetings per unit value added in currency value 	[I8]	Quantitative: Ratio		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Results of stakeholder surveys regarding satisfaction with disclosures and responses to their informational needs 	[I1]	Qualitative: Opinion and Descriptive		X	X	X
<ul style="list-style-type: none"> Quantity and Quality of required and voluntary disclosures 	[I1]	Qualitative: Descriptive and Quantitative: Number or Ratio or Percentage		X	X	X
<p>Rate the following statements as: Not at all; to a small extent, to some extent, to a great extent, nearly always:</p> <ul style="list-style-type: none"> The company is committed to assuming social responsibility, for example through agreements with the employment service, social administration, etc. For large companies, this may for example also take the following forms: Informing the public of their social efforts (for example, in annual accounts, separate social accounts, company newsletter, etc.). Publishing concrete targets for social responsibility (for example in social or ethical accounts). The company welcomes visits, offers tours and holds lectures and presentations on the company 	[I3]	Qualitative: Evaluation Scale			X	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
4.1.2 Selected Audience						
a) Employees						
<ul style="list-style-type: none"> Policy and procedures involving information, consultation and negotiation with employees over changes in the reporting of the organisation's operations (e.g. restructuring) 	[I7]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Does your company have a management system covering its labour relations? If yes, what percentage of your employees is covered by this system? 	[I11]	Quantitative: Binary and Percentage			X	
<ul style="list-style-type: none"> Does your company conduct audits of its labour relations activities? If yes: <ul style="list-style-type: none"> o what percentage of your operations is audited? o are these audits performed on a regular basis? o are these audits verified by a third party? 	[I11]	Quantitative: Binary and Percentage		X	X	X
<ul style="list-style-type: none"> How does company management consult and negotiate with employees? 	[I11]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> How is employee satisfaction measured? 	[I11]	Qualitative: Descriptive		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
b) Customers or Consumers						
• Does the company have a Customer Service Department (CSD)?	[I9]	Quantitative: Binary			X	
• Total number of calls attended by customer service department .	[I9]	Quantitative: Number			X	
• Percentage of complaints in terms of the total number of calls attended by CSD.	[I9]	Quantitative: Percentage			X	
• Percentage of complaints unattended by CSD	[I9]	Quantitative: Percentage			X	
• Average waiting time on the telephone before being attended by CSD	[I9]	Quantitative: Time			X	
• Does the company provide ongoing training for its customer service staff?	[I9]	Quantitative: Binary			X	
• Is the company's board of directors directly involved in customer/consumer service programs?	[I9]	Quantitative: Binary			X	
c) Community						
• Description of jointly managed community grievance mechanisms/authority	[I7]	Qualitative: Descriptive		X	X	X
• Number of community outreach forums	[I13, I14]	Quantitative: Number		X	X	X
• Summary of the policy for liaison with local communities	[I2]	Qualitative: Descriptive		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> • Relations with community organizations: <ul style="list-style-type: none"> ○ Does the company actively participate, with other companies, in the discussion of community problems and proposes solutions? ○ Does the company carry out educational or other campaigns of public interest in the community? 	[I9]	Quantitative: Binary			X	
d) General						
<ul style="list-style-type: none"> • Does the company enable its public relations department to provide a quick and transparent response in the event of a crisis? 	[I9]	Quantitative: Binary		X	X	X
<ul style="list-style-type: none"> • Number and nature of meetings held with stakeholders 	[I1]	Quantitative: Number and Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> • Does the company regularly track the satisfaction and/or complaints of the following stakeholders: Governments, interest groups, local communities, media, NGO's, shareholders, suppliers/service providers, trade unions 	[I4]	Quantitative: Number		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
Please indicate how the company engages with external stakeholders:	[I4]	Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> • Identification, prioritising and mapping key stakeholders for input into corporate strategy • Regular briefings/meetings in form of stakeholder dialogue • Feedback from stakeholders to boards/supervisory boards and/or senior directors • Ongoing project teams/partnerships • Not applicable • Does the company have an Ombudsman? 	[I4, I9]	Quantitative: Binary			X	
<u>4.2 Stakeholder Influence</u>						
<u>4.2.1 Decision Influence Potential</u>						
<ul style="list-style-type: none"> • Provision for formal worker representation in decision-making or management, including corporate governance 	[I7]	Qualitative: Descriptive or Quantitative: Binary		X	X	X
<ul style="list-style-type: none"> • Union involvement: % of countries which acknowledge unions in discussions; % of countries which involve unions in negotiations 	[I15]	Quantitative: Percentage		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
• Number of innovations implemented based on suggestions from Ombudsman and/or CSD	[I9]	Quantitative: Number			X	
• Does the customer/consumer service staff participate in the decision-making processes of the company?	[I9]	Quantitative: Binary			X	
• Number of board resolutions generated by stakeholders/investors and responses by board	[I1]	Quantitative: Nr & Qualitative: Descriptive			X	
• Summary of the policy on stakeholder involvement including the mechanisms by which stakeholders can participate in decision-making on issues that concern them	[I2]	Qualitative: Descriptive		X	X	X
4.2.2 Stakeholder Empowerment						
a) Staff: Grievances & Complaints						
• Staff forums and grievance procedures: % of countries with staff forums; % of countries with grievance procedures; % of staff with access to staff forum, grievance procedure or support system	[I15]	Quantitative: Percentage		X	X	X
• Is a system in place to collect and handle employee grievances and complaint?	[I4]	Quantitative: Binary		X	X	X
• Number of strikes and work stoppages in company	[I9]	Quantitative: Number		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
<ul style="list-style-type: none"> Progress towards empowerment measured by differences in responses by employees to “Global Employee Opinion and Action Survey” percentages 	[I12]	Qualitative: Relative or Quantitative: Percentage		X	X	X
<ul style="list-style-type: none"> Relationship with union; record and outcomes of complaints, frequency of job actions and legal proceedings 	[I1]	Qualitative: Descriptive or Quantitative: Ratio		X	X	X
<ul style="list-style-type: none"> Number of times grievance procedure used 	[I15]	Quantitative: Number		X	X	X
b) Complaints and Legal Actions:						
<ul style="list-style-type: none"> Number of complaints registered from members of the public concerning the process or products 	[I8]	Quantitative: Number		X	X	X
<ul style="list-style-type: none"> Number of internal and external complaints 	[I14]	Quantitative: Number		X	X	X
<ul style="list-style-type: none"> Number of complaints per unit of value added 	[I8]	Quantitative: Ratio		X	X	X
<ul style="list-style-type: none"> Number of successful legal actions taken against company or employees for work-related incidents or practices 	[I8]	Quantitative: Number		X	X	X
<ul style="list-style-type: none"> Number of legal actions per unit of value added 	[I8]	Quantitative: Ratio		X	X	X

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

Criterion & Indicators	References	Type of Indicator	Design	C	Operation	D
e) General:						
<ul style="list-style-type: none"> Number and nature of communications from stakeholders (e.g. complaints, suggestions) 	[I1]	Quantitative: Number and Qualitative: Descriptive		X	X	X
<ul style="list-style-type: none"> Does the company identify and analyse the expectations and demands from the various groups affected by its activities? 	[I9]	Quantitative: Binary		X	X	X
<ul style="list-style-type: none"> Is the nature of the company's processes, products and services criticized or opposed by any interested group or party? 	[I9]	Quantitative: Binary		X	X	X

17.1 References

- [I0] Veleva, V., & Ellenbecker, M., *A Proposal for Measuring Business Sustainability – Addressing shortcomings of Existing Frameworks*, Greener Management International, Vol. 31, Autumn, 2000, pp. 101-120.
- [I1] Goodell, E. (editor), *Social Venture Networks: Standards of Corporate Social Responsibility*, Social Venture Networks, San Fransisco, 1999.
- [I2] Azapagic, A., *Developing a Framework for sustainable development indicators for the mining and minerals industry*, Journal of Cleaner Production, Vol. 12, No. 6, 2004, pp 639-662.
- [I3] Danish Ministry of Social Affairs, KPMG, & Socialforskningsinstituttet, *Social Index: Measuring a Company's social responsibility*, Danish Ministry of Social Affairs, Copenhagen, 2000.
- [I4] SAM Research Inc., *Corporate Sustainability Assessment Questionnaire 2003: General Part*, SAM Research Inc, Zollikon-Zurich, 9 April 2003.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

-
- [I5] Spangenberg, J.H., & Bonniot, O., *Sustainability Indicators – A Compass on the Road Towards Sustainability*, Wuppertal Paper No. 81, February 1998.
- [I6] Hass, J.L., Brunvoll, F., & Hoie, H., Overview of Sustainable Development Indicators used by National and International Agencies, OECD Statistics Working Paper 2002/1, Paris, 2002.
- [I7] Global Reporting Initiative, *Sustainability Reporting Guidelines 2002*, Global Reporting Initiative, Boston, 2002.
- [I8] Institution of Chemical Engineers, *The Sustainability Metrics: Sustainable Development Progress Metrics recommend for use in the Process Industries*, Institution of Chemical Engineers. Rugby, 2002.
- [I9] Ethos Institute for Business and Social Responsibility, *ETHOS Corporate Social Responsibility INDICATORS*, Instituto Ethos de Empresas e Responsabilidade Social, São Paulo, 2001.
- [I10] Overseas Development Administration, *A guide to Social Analysis for Projects in Developing Countries*, HMSO, London, 1995.
- [I11] Storebrand Investments, *Storebrand Social Responsibility Questionnaire Draft*, Storebrand Investments, Oslo, December 2002.
- [I12] The Dow Chemical Company, *The Dow Global Public Report*, The Dow Chemical Company, Michigan, 2003.
- [I13] BHP Billiton, *Health Safety Environment and Community Report: Policy into Practice*, BHP Billiton. Melbourne, 2003.
- [I14] Sasol, *Sasol Sustainable Development Report: Share it with Sasol*, Sasol, Rosebank, 2003.
- [I15] Royal Dutch/Shell Group of Companies, *The Shell Report: Meeting the Challenge*, Royal Dutch/Shell Group of Companies, The Hague, 2003.
- [I16] Holme, R., & Watts, P., *Corporate Social responsibility: making good business sense*, World Business Council for Sustainable Development, Geneva, January 2000
- [I17] United Nations Commission on Sustainable Development, *Indicators of sustainable development: guidelines and methodologies*, United Nations, 2001. Available from <http://www.un.org/esa/sustdev/natlinfo/indicators/indisd/indisd-mg2001.pdf>, visited on 19 November 2003.
- [I18] Spangenberg, J.H., *Sustainability Management Indicators and the Corporate Human Development Index CHDI*, Seri Working Paper Series, Sustainable Europe Research Institute, Cologne, May 2000
- [I19] Anglo American, *Anglo American Report to Society: Towards Sustainable Development*, Anglo American Corporate Communications Department, London, 2003.
- [I20] Udjo, E.O., Simelane, S., & Booysen, D., *Socio-Economic Indicators of Development Progress within the OECD framework in South Africa*, Paper presented at the Millennium Conference of Commonwealth Statisticians, Gaborone, Botswana, 1-5 May 2000.
- [I21] Briassoulis, H., *Sustainable Development and its indicators: Through a (planner's) glass darkly*, Journal of Environmental Planning and Management, Vol. 44, No. 3, 2001, pp. 409-427.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix I

[I22] Shantz, T., *Social Impact Assessment for the New South Wales Far North Coast*, Discussion Paper prepared for the Northern Rivers Regional Strategy, September 2002.

[I23] McClintock, S., *Strategic Environmental Management Plan for the Richards Bay SEA*, Environmentek report, JX01K, CSIR, prepared for the Richard Bay Transitional Local Council: Forward Planning Section, 2000.

[I24] Center for Urban Transportation Research, *Community Impact Assessment Handbook*, Department of Transportation, Florida, 2000.

18. Appendix J: Social Aspects in asset life cycle

The design phase of the asset life cycle (see Figure 2.4) is not included in the discussion since the few social aspects that are relevant to the design phase are all addressed in strategies or guiding principles which are or should be considered during the phase. The only criterion addressed as a process is Research and Development, and often the Research & Development life cycle activities coincides with the design phase.

18.1 Internal Human Resources criteria through the asset life cycle phases

Criteria	Construction	Operation	Decommissioning
Employment Opportunities ⁷ <i>a) Definition:</i>	The criterion assesses the number and types of employment opportunities that exist within the business. These might change annually and employee turnover also occurs. In decommissioning employment opportunities will be destroyed. Employees might be relocated or re-assigned between business units or within the industry sector.		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Employee procurement process and policies • Communication with Stakeholders (link to Information Provisioning criteria) • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Employee procurement process and policies. • Report situation in sustainable development reports (measurement of outcomes). 	<ul style="list-style-type: none"> • Employee procurement process and policies. • Communication with Stakeholders (link to Information Provisioning criteria) • Report in Sustainable development report (measurement of outcomes)
Employment Remuneration <i>a) Definition:</i>	Employment Remuneration is a criterion that assesses the existence and quality of business practices. The remuneration received by employees influence the value of employment opportunities created. In most countries employment remuneration are strongly influenced and governed by legislation determining minimum wages.		

⁷ The criterion Employment Opportunities has a direct linkage to the Community Capital criterion Economic Welfare.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Strategic decision of business to follow country legislation or to over more. • Remuneration policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Strategic decision of business to follow country legislation or to over more. • Remuneration policies • An aspect of SA 8000 accreditation • Reports on situation in sustainable development report (measurement of outcomes). 	<ul style="list-style-type: none"> • Strategic decision of business to follow country legislation or to over more. • Remuneration policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p><i>Disciplinary & Security Practices</i> <i>a) Definition:</i></p>	<p>Disciplinary and Security Practices is a criterion, which assesses the existence and quality of the business process to deal with disciplinary hearings, etc. In certain cases the criterion also describes the situation with regards to security personnel within the company. It thus assesses conditions or processes and not direct impacts.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Business policies • An aspects of SA 8000 accreditation • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p><i>Employee Contracts</i> <i>a) Definition:</i></p>	<p>Employee Contracts is a criterion that assesses the existence and quality of business practices and a specific business process. In most countries legislation can dictate what should be included in an employee contract. The criterion thus measures whether the company practices/policies adheres to legislation and international standards with regards to their employee contracts.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Business policies • An aspect of SA 8000 accreditation. • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p>Equity & Diversity <i>a) Definition:</i></p>	<p>Equity and Diversity is a criterion that describes the situation within the company with regards to gender, race, age, region and minority or disadvantaged equity and diversity. The indicators can also assess certain practices or adherence to national initiatives or laws such as affirmative action policies in South Africa.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Business policies • An aspect of SA 8000 accreditation • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p>Labour Sources <i>a) Definition:</i></p>	<p>The Labour Sources criterion describes the situation within the company with regards to child and forced labour as well as the use of local labour sources. In addition business policies and procedures to ensure that no child or forced labour are used are also assessed.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies, which can state preference for local labour. • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Business policies, which can state preference for local labour. • An aspect of SA 8000 accreditation • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies, which can state preference for local labour. • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p>Health & Safety Practices <i>a) Definition:</i></p>	<p>The criterion Health and Safety Practices assesses the quality of all health and safety related business practices. In addition, it also describes the current situation within the business with regards to health and safety training and disaster preparedness. It does not measure any direct impacts on employees.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after construction 	<ul style="list-style-type: none"> • Business policies with regards to training • An aspect of SA 8000 accreditation • NOSA/ISO certification • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Measurement of outcomes after decommissioning.
<p>Health & Safety Incidents <i>a) Definition:</i></p>	<p>The Health and Safety Incidents criterion measures the direct actual or predicted impacts on employees due to health and safety incidents.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Response/Emergency processes • Predict the possible incidents • Measurement of outcomes after construction. 	<ul style="list-style-type: none"> • Reports on situation in sustainable development report (measurement of outcomes) • Response/Emergency processes 	<ul style="list-style-type: none"> • Response/Emergency processes • Predict the possible incidents • Measurement of outcomes after decommissioning.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p>Research & Development</p> <p><i>a) Definition:</i></p>	<p>The construction of a new plant can imply the implementation of R&D ideas or proposals.</p>	<p>Research and Development activities that support the goals of sustainable development have a positive social sustainability impact, which contribute to total business sustainability.</p>	<p>Research and Development can be used to find new usages for the existing plant and/or technology.</p>
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies with regards to the involvement of Research and Development team on an as needed basis. 	<ul style="list-style-type: none"> • Business strategy with regards to R&D. • Business policies with regards to the management and funding of R&D. • Reports on situation in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies with regards to the involvement of Research and Development team on an as needed basis.
<p>Career Development</p> <p><i>a) Definition:</i></p>	<p>The Career Development criterion assesses the quality of business practices and procedures with regards to the development of individual employees. It also describes the current situation with regards to employee development.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business policies • Development Programmes/process to ensure future employability of temporary workers for example. • Measurement of outcomes after construction. 	<ul style="list-style-type: none"> • Business policies • Development Programmes • Reports on situation in sustainable development report (measurement of outcomes) • Human Resource Structures 	<ul style="list-style-type: none"> • Business policies • Development Programmes to ensure future employability of workers. • Measurement of outcomes after decommissioning.

18.2 External Population criteria through the asset life cycle phases

Criteria	Construction	Operation	Decommissioning
Health <i>a) Impact</i>	The criterion, Health, describes the health situation in the community with regards to the availability of services and the increase or decreases in certain illnesses. With regards to the availability of medical services the business can have an indirect impact due to the people it attracted to the area or a direct impact by making its facilities available to the community. The increases or decreases in diseases can be a result of migratory effect in the local community or through first-order environmental impacts (precautionary principle).		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Measurement of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • CSR projects can focus on the Health dimension. • Sustainable development reports can address external health complaints and report on the number of people served by the business's facilities. (measurement of outcomes) 	<ul style="list-style-type: none"> • Measurement of outcomes after decommissioning, comparison between before, during and after.
Education <i>a) Impact</i>	The criterion, Education, describes the education situation in the community with regards to the availability of schools, etc. and the level of education. The business can have an indirect impact on education availability as a result of the migration of people in the area because of the business's operations. The business can also directly influence the level of education within a community by means of CSR projects.		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Measurement of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • CSR projects that focus on the Education dimension • Sustainable development reports can address educational initiatives in the local community. 	<ul style="list-style-type: none"> • Measurement of outcomes after decommissioning, comparison between before, during and after

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p>Housing a) <i>Definition:</i></p>	<p>The criterion, Housing, describes the housing situation within the community with regards to the cost of housing, the availability of housing and the average size of households. The business can influence this situation either directly by building houses or buying houses, or indirectly due to the migration of people in the area since the business is operating there or through a change in prices due to the location of property relative to business operations.</p>		
<p>b) <i>Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. • Housing can be part of Employee Remuneration (See criterion under Internal Human Resources). • Business policy with regards to company housing or accommodation. • The building of adequate housing can be included into construction project thus if company decides on the policy as a strategy. 	<ul style="list-style-type: none"> • Housing can be part of Employee Remuneration (See criterion under Internal Human Resources). • Business policy with regards to company housing or accommodation. 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. • Business policy with regards to company housing or accommodation. • Housing can be part of Employee Remuneration (See criterion under Internal Human Resources).
<p>Service Infrastructure a) <i>Definition:</i></p>	<p>Service Infrastructure is a descriptive criterion of the community situation. Business can directly influence the “load” on this infrastructure, which can influence the availability. Furthermore, social secondary indirect impacts due to first order environmental impacts can influence the quality of the service infrastructure. The influx of people due to the existence of the business can also indirectly influence the “load” on the infrastructure.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. • Communicate with authorities if necessary. (Information Provisioning policies) 	<ul style="list-style-type: none"> • Report on usage in sustainable development report (measurement of outcomes). • CSR projects can focus on this area. 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning comparison between before, during and after. • Communicate with authorities if necessary. (Information Provisioning policies)
<p>Mobility Infrastructure <i>a) Definition:</i></p>	<p>The Mobility Infrastructure criterion describes the current situation in the community with regards to public transport and transport networks. The business can directly and indirectly influence the load on transport networks and indirectly the load on public transport. Indirect impacts are due to influx of people and direct impacts are due to logistic activities of the company.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. • Communicate with authorities if necessary. (Information Provisioning policies) • Construction can include the building of infrastructure. 	<ul style="list-style-type: none"> • Report on usage in sustainable development report (measurement of outcomes). 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after. • Communicate with authorities if necessary. (Information Provisioning policies)
<p>Regulatory & Public Services <i>a) Definition:</i></p>	<p>The criterion Regulatory and Public Services assesses the current situation in the community with regards to access to public services and the functioning of regulatory services. The company can indirectly influence the status due to the influx of people or directly by either contributing funds/time to enhance the quality or quantity of public services or by making contributions to the regulatory services.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Company strategy with regards to bribes, etc. • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Company strategy with regards to bribes, etc. • Report on situation with regards to political party payment and/or bribes in sustainable development report (measurement of outcomes). • CSR projects 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after. • Company strategy with regards to bribes, etc.
<p>Sensory Stimuli <i>a) Definition:</i></p>	<p>The Sensory Stimuli criterion describes the current situation within the community. It is usually assessed qualitatively. The business has indirect impacts on this criterion, first because of secondary indirect social impacts due to first order environmental impacts and second due to influx of people.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Measurement/prediction of impacts after construction, comparison between before, during and after • Investigate mitigation options for possible sensory stimuli impacts. • Communicate with community (Information Provisioning policies) 	<ul style="list-style-type: none"> • Report on external complaints in sustainable development report (measurement of outcomes). 	<ul style="list-style-type: none"> • Measurement/prediction of impacts after decommissioning, comparison between before, during and after • Investigate mitigation options for possible sensory stimuli impacts. • Communicate with community (Information Provisioning policies)
<p>Security <i>a) Definition:</i></p>	<p>The Security criterion describes the situation in the community with regards to crime. The business can have an indirect impact on the criterion due to the influx of people.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes from specific operational activities such as major maintenance projects, comparison between before, during and after. 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.
<p>Cultural Properties <i>a) Definition:</i></p>	<p>The Cultural Properties criterion assesses the impact of the business on cultural properties such as graveyards or heritage sites. It measures the direct impact and might not always be applicable.</p>		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Determine predicted impact if any • Business policies to handle if cultural properties are endangered. 	<ul style="list-style-type: none"> • Business policies 	<ul style="list-style-type: none"> • Determine predicted impact if any • Business policies to handle if cultural properties are endangered.
<p>Economic Welfare <i>a) Definition:</i></p>	<p>The Economic Welfare criterion describes the economic situation within the community. The business can directly influence the welfare due to employment opportunities created (link to employment opportunities) combined with a policy that prefers local labour and indirectly because of indirect job spin-offs or influx of people.</p>		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Business policies to buy locally. • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Business policies to buy locally • Report on local purchases etc in sustainable development report (measurement of outcomes). 	<ul style="list-style-type: none"> • Business policies to buy locally • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.
<p>Social Pathologies <i>a) Definition:</i></p>	<p>The Social Pathologies criterion describes the situation in the community with regards to social pathologies such as alcoholism, HIV infections, etc. The business can have an indirect impact on the criterion due to influx of people or loss of employment opportunities. The company can also offer programs to assist workers suffering from social pathologies.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Policies to address Social Pathologies under employees. • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Policies to address Social Pathologies under employees. • Company can offer drug and alcohol or other counseling to employees. • CSR projects that focus on Social Pathologies (e.g. AIDS programs) 	<ul style="list-style-type: none"> • Policies to address Social Pathologies under employees. • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.
<p>Social Cohesion</p> <p><i>a) Definition:</i></p>	<p>The Social Cohesion criterion is a descriptive criterion (thus qualitative) assessing the sense of place of the community. Aspects such as the togetherness and the degree to which people feel part of the community are assessed by this criterion. The business can indirectly influence this criterion due to influx of people and the impact on the criterion can become direct if any business operations involve resettlement of communities.</p>		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Resettlement Policies if applicable. • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • CSR projects which focuses on community cohesion. 	<ul style="list-style-type: none"> • Resettlement policies if applicable. • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.

18.3 Macro Social Performance criteria through the asset life cycle phases

Criteria	Construction	Operation	Decommissioning
<p>Economic Welfare</p> <p><i>a) Definition:</i></p>	<p>The criterion Economic Welfare measures the contribution of the company to the economic welfare of the region or nation, and thus measures a direct impact.</p>		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

Trading Opportunities <i>a) Definition:</i>	The criterion, Trading Opportunities, measures the indirect contribution (positive or negative) that is made by the company to the economy through trading initiatives.		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction, comparison between before, during and after. 	<ul style="list-style-type: none"> • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning, comparison between before, during and after.
Monitoring <i>a) Definition:</i>	The Monitoring criterion assesses the existence of company practices and/or monitoring stations to assist government with monitoring environmental impacts.		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Monitoring Stations can be build as part of the construction. • Business Processes to gather data and to share with government. (Information Provisioning policies) 	<ul style="list-style-type: none"> • Business Processes to gather data and to share with government. (Information Provisioning policies) • Report in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Monitoring stations can be lost due to decommissioning
Legislation <i>a) Definition:</i>	The Legislation criterion assesses the existence of company policies to participate in legislation development processes.		
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Business policies • Measurement/prediction of outcomes after construction. 	<ul style="list-style-type: none"> • Business policies • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business policies • Measurement/prediction of outcomes after decommissioning.
Enforcement <i>a) Definition:</i>	The Enforcement criterion assesses the existence of company practices to enforce environmental standards on to their suppliers.		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business process/policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Address as part of selection criteria in Supplier Selection Process or Supplier codes of conduct. • Measurement/prediction of outcomes after construction. 	<ul style="list-style-type: none"> • Business process/policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Address as part of selection criteria in Supplier Selection Process or Supplier codes of conduct. • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business process/policies • Address as part of selection criteria in contractor selection process or contractor codes of conduct. • Address as part of selection criteria in Supplier Selection Process or Supplier codes of conduct. • Measurement/prediction of outcomes after decommissioning.
---	---	--	--

18.4 Stakeholder Participation criteria through the asset life cycle phases

Criteria	Construction	Operation	Decommissioning
<p><i>Collective Audience</i> a) Definition:</p>	<p>The Collective Audience criterion describes the information provisioning practices and policies within the company and also assesses these practices and policies.</p>		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business Strategy with regards to stakeholders. • Business policies • Stakeholder meetings • Webpage • Stakeholder surveys • Media releases • Measurement/prediction of outcomes after construction. 	<ul style="list-style-type: none"> • Business Strategy with regards to stakeholders. • Business policies • Stakeholder meetings • Webpage • Stakeholder surveys • Media releases • Sustainable development reports • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business Strategy with regards to stakeholders. • Business policies • Stakeholder meetings • Webpage • Stakeholder surveys • Media releases • Measurement/prediction of outcomes after decommissioning.
<p><i>Selected Audience</i> <i>a) Definition:</i></p>	<p>The Selected Audience criterion describes and assesses the information provisioning practices and policies of the company towards specific stakeholders.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Business strategy with regards to stakeholders. • Business policies • Contact centres • Measurement/prediction of outcomes after construction. 	<ul style="list-style-type: none"> • Business strategy with regards to stakeholders. • Business policies • Contact centres • Address in sustainable development report (measurement of outcomes) 	<ul style="list-style-type: none"> • Business strategy with regards to stakeholders. • Business policies • Contact centres • Measurement/prediction of outcomes after decommissioning.
<p><i>Decision-Influence Potential</i> <i>a) Definition:</i></p>	<p>The criterion addresses the degree to which the company actually incorporates the stakeholders’ opinions into operational decision-making.</p>		
<p><i>b) Ways to address the criterion:</i></p>	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after construction. • Business process to communicate 	<ul style="list-style-type: none"> • Address in sustainable development report (measurement of outcomes) • Business process to communicate 	<ul style="list-style-type: none"> • Measurement/prediction of outcomes after decommissioning. • Business process to communicate

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix J

	stakeholders' view to decision-makers.	stakeholders' view to decision-makers.	stakeholders' view to decision-makers.
Stakeholder Empowerment	The criterion addresses the quality and quantity of structures to ensure that stakeholders can express their views and that it is known throughout the company.		
<i>a) Definition:</i>			
<i>b) Ways to address the criterion:</i>	<ul style="list-style-type: none"> • Staff/Community Forums • Measurement/prediction of outcomes after construction. • Business processes to ensure the stakeholders' views are known. 	<ul style="list-style-type: none"> • Staff/Community Forums • Address in sustainable development report (measurement of outcomes) • Business processes to ensure the stakeholders' views are known. 	<ul style="list-style-type: none"> • Staff/Community Forums • Measurement/prediction of outcomes after decommissioning. • Business processes to ensure the stakeholders' views are known.

19. Appendix K: Delphi Technique's Questionnaire

19.1 Questionnaire Round 1:

Respondent Number:

Relevance of Criteria

Please state whether you think the following criteria are should be addresses within the project by the project team or whether it should be addressed on a higher or other level within the company?

The following definitions apply:

Project Management:

- Addressed within the project.
- Guidelines set or developed by project managers
- Measured within different phases of project

Corporate Governance Framework:

- Addressed on a higher level within company by a guideline or policy or preferred action steps.
- Addressed by department in company in accordance with guidelines or policies or strategy
- Policies/Guidelines that guides all company activities also guides similar activities in project
- Measured after project completion to determine project adherence to corporate policies.

Definitions for the criteria are as follows:

Employment Opportunities	Employment Opportunities are concerned with the type of employment opportunities together with the consistency in the number thereof created or destroyed by a project.
Employment Remuneration	Employment Remuneration refers to the payment of employees for work delivered or executed. It includes the monetary amount paid as well as additional benefits that employees receive as part of their salary packages.
Disciplinary & Security Practices	Disciplinary and Security Practices is concerned with the company's disciplinary procedures as well as the use of security personnel. These practices should not violate any human or other rights of the employees.
Employee Contracts	Employee Contracts is concerned with the agreement between the employer and the employee. The contract must adhere to legal standards.
Equity & Diversity	The diversity aspects of the criterion is concerned with the composition of staff with regards to gender, race and cultural heritage. The equity aspects of the criterion will determine whether all people are treated justly, fairly and impartially.

Labour Sources	The criterion focuses on what sources of labour the company employ, e.g. child labour, forced labour.
Health & Safety Practices	Health and Safety Practices assess all precautionary procedures and practices of the company to ensure preparedness for possible health and safety incidents.
Health & Safety Incidents	Health and Safety Incidents, assesses actual incidents that take place and analyses these according to seriousness and compensation.
Research Development	Research and Development evaluates the company's contribution to sustainable product development through its research and development programmes as well as its innovativeness
Career Development	Career Development focuses on the training of employees and the provision of career guidance and higher-education opportunities
Health	Health focuses on the additional strain or beneficitation of a company's activities on local medical facilities.
Education	Education considers the following impacts of a company: <ul style="list-style-type: none"> • impact on education facilities due to the operational activities, • impact of possible training opportunities, and, • impact on the community's level of education through information sharing by the company
Housing	Housing assesses the impact of the business on the availability and quality of housing within the external community
Service Infrastructure	Service infrastructure studies the impact of the operational activity on: Access to clean and safe water, Electricity supply, Sewage services, and Waste services.
Mobility Infrastructure	Mobility Infrastructure determines the additional burden the operational activities of the company place on the public transport system and on the transport network of the external community.
Regulatory & Public Services/ Institutional Services	Regulatory and Public Services studies the availability of public services such as libraries, swimming pools, etc. and also looks at the political set-up within an external community.
Sensory Stimuli	Sensory Stimuli describes typical community characteristics with regards to noise, odour and aesthetics.
Security	Security describes the security characteristics of the community.
Cultural Properties	Cultural Properties describes unique features or characteristics of a specific community.
Economic Welfare	Economic Welfare describes the economic climate within the community as well as the community's economic characteristics.
Social Pathologies	Social Pathologies describes the existence of social conditions that are deviations from the norm, which can include the occurrence of certain diseases, for example: alcoholism, domestic violence, suicides, etc

Social Cohesion	Social Cohesion or Community Cohesion refers to the degree to which residents have a sense of belonging to their neighbourhood or community.
Economic Welfare	Economic Welfare assesses the contribution of the company to the economic welfare of the region or nation.
Trading Opportunities	Trading Opportunities assesses the contribution (positive or negative) that is made by the company to the economy in the form of indirect benefits or costs that the operations of the company resulted in on a regional or national level.
Monitoring	Monitoring considers all initiatives of the company that aims to extend or improve the environmental monitoring abilities of society.
Legislation	Legislation assesses the company's involvement in the writing of new environmental legislation for the country or region in which the company operates.
Enforcement	Enforcement entails any company practices to enforce good environmental management practices down the supply chain.
Information Provisioning	Information Provisioning studies the quantity and quality of information that is shared with stakeholders.
Stakeholder Influence	Stakeholder Influence studies the degree to which the company actually incorporate the stakeholders' opinions into operational decision-making as well as the quality and quantity of structures to ensure that stakeholders can express their views and that it is known throughout the company

Who should address the specific criterion – Project Management or Corporate Governance

Framework?

Criteria	Project Management	Corporate Governance Framework	Comments
Employment Opportunities			
Employment Compensation			
Disciplinary & Security Practices			
Employee Contracts			
Equity			
Labour Sources			
Health & Safety Practices			
Health & Safety Incidents			
Research Development			
Career Development			
Health			
Education			
Housing			
Service Infrastructure			
Mobility Infrastructure			
Regulatory & Public Services/ Institutional Services			
Sensory Stimuli			
Security			
Cultural Properties			
Economic Welfare			
Social Pathologies			
Social Cohesion			
Economic Welfare			
Trading Opportunities			
Monitoring			
Legislation			
Enforcement			
Information Provisioning			
Stakeholder Influence			

19.2 Questionnaire Round 2:

Respondent Number:

Relevance of Criteria

- Please review each of the following items identified in the individual interviews as being relevant to the project life cycle, i.e. they should be addressed in the BD&I model by means of guidelines or measurements in the individual life cycle phases.
- Please indicate whether you agree or disagree.
- Please feel free to provide clarification or any additional comments in the last column.
- The focus is on normal projects under normal circumstances and not on new ventures in new countries or areas.

Criteria	Comments of respondents	Agree/Disagree	Comments on item
Job Opportunities			
Disciplinary & Security Practices	Project might develop own or will adhere to company's		
Equity	Project must adhere to company or country goals		
Labour Sources	Project must enforce company labour source policy		
Health & Safety Incidents			
Research & Development	Involved at least until Gate 3. Project can request additional R&D		
Career Development	Project is career development opportunity for existing personnel as well as part-time skilled workers for		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix K

	which each new project is development.			
Health	The impact of the business initiative on society are normally studied in the EIA.			
Education				
Housing				
Service Infrastructure				
Mobility Infrastructure				
Sensory Stimuli				
Security				
Cultural Properties				
Economic Welfare				
Social Pathologies				
Social Cohesion				
Economic Welfare on a Macro Social Level				
Monitoring				
Legislation				
Enforcement				
Information Provisioning	Guided by company guidelines of how public participation should be executed.			
Stakeholder Influence				

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix K

Please indicate whether you think the following social aspects should be addressed in or by the project, business strategy or functional departments within the company (i.e. Finances, HR). Social aspects can be addressed by more than one of the choices. If you choose a functional department please indicate which functional department.

Criteria	Project	Business Strategy	Functional Department
Employment Opportunities			
Employment Remuneration			
Disciplinary & Security Practices			
Employee Contracts			
Equity & Diversity			
Labour Sources			
Health & Safety Practices			
Health & Safety Incidents			
Research Development			
Career Development			
Health			
Education			
Housing			
Service Infrastructure			
Mobility Infrastructure			
Regulatory & Public Services/ Institutional Services			
Sensory Stimuli			

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix K

Security			
Cultural Properties			
Economic Welfare			
Social Pathologies			
Economic Welfare			
Trading Opportunities			
Monitoring			
Legislation			
Enforcement			
Information Provisioning			
Stakeholder Influence			

20. Appendix L: Ways to address social criteria in projects

<i>Criterion</i>	<i>Approach in Project Management Methodology</i>
<u>INTERNAL HUMAN RESOURCES</u>	
Employment Opportunities	<ul style="list-style-type: none"> • Company strategy with regards to employee intensive versus technology intensive approaches will influence how the criterion manifests in the project. • Measure predicted social impact • Project Governance Framework: <ul style="list-style-type: none"> ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Actual employment creation indicators • Risk Management: <ul style="list-style-type: none"> ○ Guidelines to guarantee that the temporary nature of certain employment opportunities are communicated to ensure no false expectations (link to Information Provisioning criterion). • Functional Department (Human Resources) should provide guidance and assistance in accordance to company policy/strategy and be actively involved.
Employment Remuneration	<ul style="list-style-type: none"> • The functional department Human Resources should handle employment remuneration as part of employee contracts in accordance to Business Policies. • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy regarding minimum wages (linked to company policy/strategy) ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Wage indicators ○ Include criterion in Contractor codes of conduct and selection criteria.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Disciplinary & Security Practices	<ul style="list-style-type: none"> • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Include criterion in Contractor codes of conduct and selection criteria. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators reporting on the use of disciplinary & security practices • Functional Department (Human Resources) should provide guidance and assistance in accordance to company policy/strategy and be actively involved.
Employee Contracts	<ul style="list-style-type: none"> • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Include criterion in Contractor codes of conduct and selection criteria. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators reporting on existence and standards of employee contacts • Functional Departments (Human Resources & Legal Department) should provide guidance and assistance in accordance to company policy/strategy and be actively involved.
Equity & Diversity	<ul style="list-style-type: none"> • Company strategy with regards to equity will influence how the project addresses equity. • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Include criterion in Contractor codes of conduct and selection criteria. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators reporting on the equity of labour force used in project • Functional Department (Human Resources) should provide guidance and assistance in accordance to company policy/strategy and be actively involved in employee sourcing process.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Labour Sources	<ul style="list-style-type: none"> • Company strategy about preferred labour sources will influence how the project addresses labour sources. • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy regarding labour sources ○ Include criterion in Contractor codes of conduct and selection criteria. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Labour sources and equity indicators • Risk Management <ul style="list-style-type: none"> ○ Guidelines about preferred labour sources for employment opportunities, which can be handled by Human Resources Functional Department. • Functional Department (Human Resources) should provide guidance and assistance in accordance to company policy/strategy and be actively involved.
Health & Safety Practices	<ul style="list-style-type: none"> • Company strategy about safety standards and practices will influence how the project addresses the criterion. • Functional Departments (e.g. SHE departments or departments dealing with SHE issues) should be involved in project and provide guidance and assistance. • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy regarding safety and health practices. ○ Include criterion in Contractor codes of conduct and selection criteria. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators to assess project’s adherence to policies.
Health & Safety Incidents	<ul style="list-style-type: none"> • Risk Assessment to assess risks of incidents before quantitative impact predictions can be made • Measure predicted social impact when information is available • Risk Management <ul style="list-style-type: none"> ○ Guidelines to communicate to right audience if high risks exist (link to Selected Audience criterion)

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Research & Development	<ul style="list-style-type: none"> • Company strategy guides all research & development activities that are usually performed by a functional department (e.g. R&D). • In cases where project budget funds additional research and development to ensure project technology can exist, the predicted costs are measured as a social impact if technology supports sustainable development.
------------------------	--

Career Development	<p>Projects are opportunities for certain employees to develop new skills and the project can promote skills development under unemployed members of the community, thus it should be addressed by:</p> <ul style="list-style-type: none"> • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy regarding training and education. ○ Include criterion in Contractor codes of conduct and selection criteria if deemed as important. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Career Development Indicators • Risk Management: <ul style="list-style-type: none"> ○ Guidelines for employee training opportunities. • Functional Department (Human Resources) should provide guidance and assistance in and be actively involved.
--------------------	---

EXTERNAL POPULATION

Health	<ul style="list-style-type: none"> • Company strategy with regards to the health of the external population will guide project actions • If applicable and deemed important by community, the social development plan can address health issues and health facilities • Measure predicted social impact
--------	--

Education	<ul style="list-style-type: none"> • If applicable and deemed important by community, the social development plan can address education issues and education facilities. • Measure predicted social impact
-----------	--

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Housing	<ul style="list-style-type: none">• Company strategy with regards to housing for employees will influence project actions.• Measure predicted impact• Risk Management:<ul style="list-style-type: none">◦ Determine risk due to influx of people◦ Mitigate risk if applicable• If applicable and deemed important by community, the social development plan can address housing.
Service Infrastructure	<ul style="list-style-type: none">• If applicable and deemed important by community, the social development plan can address service infrastructure (e.g. the creation of a pipe network for water) .• Measure predicted social impact• Risk Management:<ul style="list-style-type: none">◦ Guidelines with regards to the use of community service infrastructure and the obtaining of company’s own service infrastructure (example electricity directly from ESKOM instead of municipality).◦ Guidelines for interaction with authorities (link to selected audience criterion)
Mobility Infrastructure	<ul style="list-style-type: none">• If applicable and deemed important by community, the social development plan can address mobility infrastructure.• Measure predicted social impact• Risk Management:<ul style="list-style-type: none">◦ Guidelines if building temporary infrastructure in accordance with company policy◦ Guidelines for interaction with authorities (link to selected audience criterion)

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Regulatory & Public Services	<ul style="list-style-type: none"> • If applicable and deemed important by community, the social development plan can address public services e.g. libraries or swimming pools. • Project Governance Framework (CFG). <ul style="list-style-type: none"> ◦ Policy regarding interaction with regulatory services dealing with aspects such as bribes, contributions to political parties, etc. ◦ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators measuring adherence to policies.
Sensory Stimuli	<ul style="list-style-type: none"> • Measure predicted social impact • Risk Management: <ul style="list-style-type: none"> ◦ Risk Assessment to assess risks of incidents before quantitative impact predictions can be made (linkage to environmental dimension) ◦ Mitigation options to be investigated if necessary. ◦ Guidelines for interaction with community (link to collective and selected audience criteria) with regards to information sharing. • Active involvement from the Environmental Department to assist with predictions and to provide guidance.
Security	<ul style="list-style-type: none"> • Community security is influenced by influx of people. • Measure predicted impact if possible
Cultural Properties	<ul style="list-style-type: none"> • Measure possible social impact. • Risk Management: <ul style="list-style-type: none"> ◦ Determining if cultural properties are applicable to project or might be endangered by project ◦ Guidelines to handle situation if applicable. ◦ Guidelines to interact with community (link to selected audience criterion)
Economic Welfare	<ul style="list-style-type: none"> • Company strategy with regards to local economy will influence project actions. • Measure the predicted social impact.
Social Pathologies	<ul style="list-style-type: none"> • If deemed important by community, social development action plan can address social pathologies with regards to treatment centres, etc. • Measure the predicted social impact if possible.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Social Cohesion	<ul style="list-style-type: none"> • Importance assign to social cohesion in the community will influence project actions. • Measure predicted impacts if possible • Risk Management: <ul style="list-style-type: none"> ◦ Guidelines if resettlement is applicable.
<u>MACRO SOCIAL PERFORMANCE</u>	
Economic Welfare	<ul style="list-style-type: none"> • Company strategy/policies with regards to the economy and the economic situation will influence project actions. • Measure predicted social impact.
Trading Opportunities	<ul style="list-style-type: none"> • Company strategy/policies with regards to the economy and the economic situation will influence project actions. • Measure predicted social impact • Functional Departments should be involved to provide guidance if necessary if project involves imports and exports.
Monitoring	<ul style="list-style-type: none"> • Company strategy/policies with regards to environmental monitoring will guide project actions. • Functional Departments (e.g. Environmental Department) should be involved and provide guidance in monitoring of environmental impacts of project or if additional monitoring stations are required due to the project.
Legislation	<ul style="list-style-type: none"> • Company strategy/policies with regards to handling of and involvement in legislation will guide project actions • Risk Assessment: <ul style="list-style-type: none"> ◦ Determine if project are illegal in terms of any legislation or if project will require new legislation to be passed. ◦ Functional Departments (e.g. Legal Department) should be involved and provide guidance if attempts to adjust legislation or have new legislation implemented needs to be made.

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Enforcement

- Company strategy/policies with regards to environmental enforcement will guide project actions
 - Project Governance Framework (CFG).
 - Policy with regards to the enforcement of environmental standards.
 - Include criterion in Contractor codes of conduct and selection criteria.
 - Guidelines for supplier selection and codes of conduct which include criterion
 - Post Implementation Review (Indicators):
 - Indicators measuring enforcement actions.
 - Risk Management
 - Determine if any environmental practices of contractors or suppliers can endanger the company's image or reputation.
-

STAKEHOLDER PARTICIPATION

Collective Audience

- Company strategy/policies with regards information provisioning will guide project actions
 - Project Governance Framework (CFG).
 - Policy with regards to information provisioning
 - Guidelines for sharing information with all.
 - Post Implementation Review (Indicators):
 - Indicators measuring information provisioning.
 - Risk Management
 - Identification of all stakeholders.
 - Identification of possible critical areas of concern with regards to stakeholder involvement
 - Guidelines for interaction with stakeholders and handling difficult stakeholders.
-

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix L

Selected Audience	<ul style="list-style-type: none"> • Company strategy/policies with regards to information provisioning will guide project actions • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy with regards to information provisioning ○ Guidelines for sharing information with selected audiences. ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators measuring information provisioning. • Risk Management <ul style="list-style-type: none"> ○ Identification of specific stakeholders groups that should be handled separately. ○ Identification of possible critical areas of concern with regards to the involvement of these groups. ○ Guidelines for interaction with selected groups of stakeholders and information sharing.
Decision-Influence Potential	<ul style="list-style-type: none"> • Company strategy/policies with regards to stakeholder influence will guide project actions • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy with regards to involving stakeholders in decision-making. ○ Guidelines for distributing stakeholders' views ○ Post Implementation Review (Indicators): <ul style="list-style-type: none"> ▪ Indicators measuring decision-influence potential. • Risk Management <ul style="list-style-type: none"> ○ Identification of resistance to company decisions. ○ Guidelines for incorporating and communicating stakeholders' views on certain decisions.
Stakeholder Empowerment	<ul style="list-style-type: none"> • Company strategy/policies with regards to stakeholder influence will guide project actions • Project Governance Framework (CFG). <ul style="list-style-type: none"> ○ Policy with regards to empowering stakeholders. ○ Post Implementation Review (Indicators):

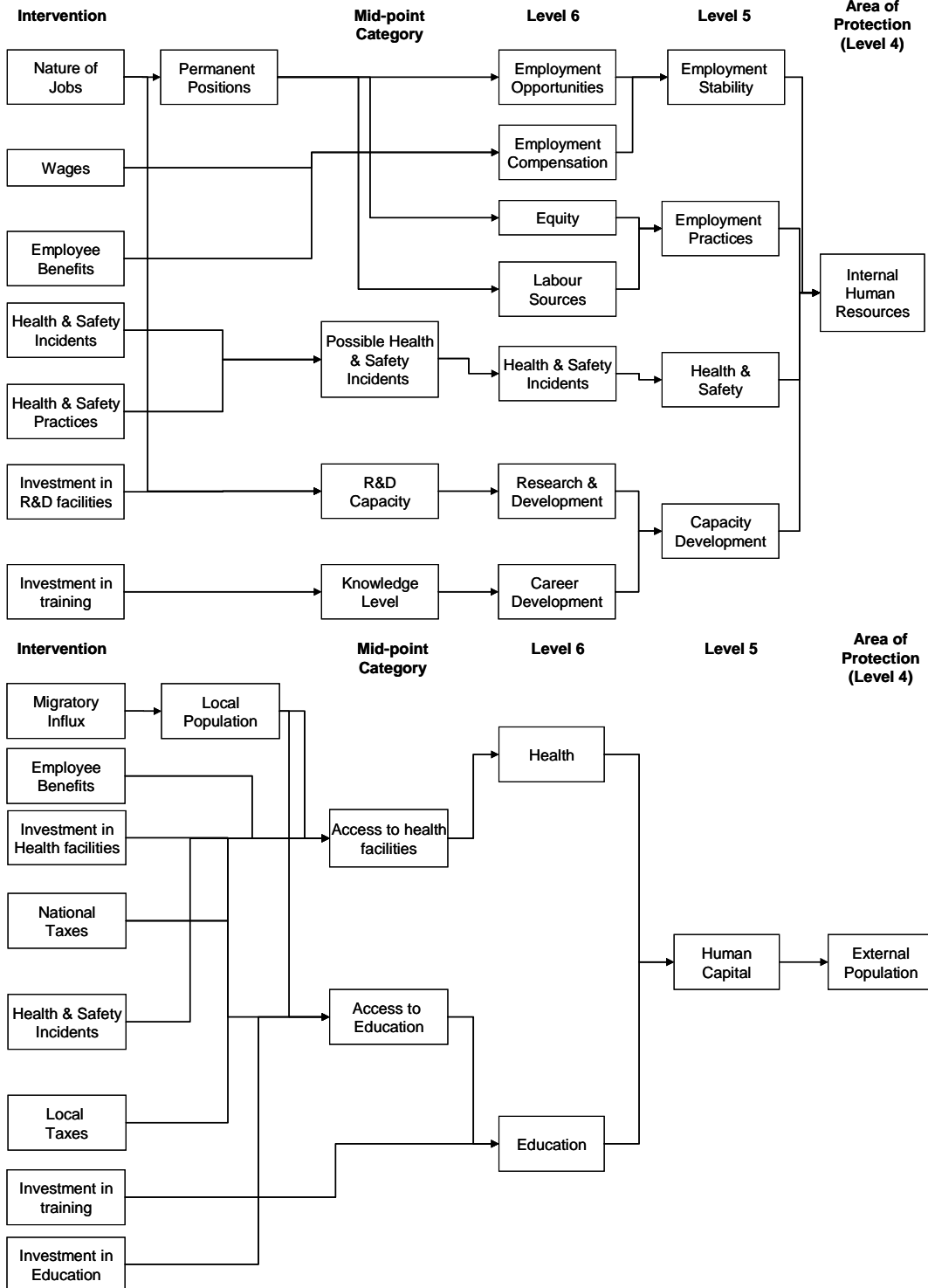
Sustainable project life cycle management: Development of social criteria for decision-making

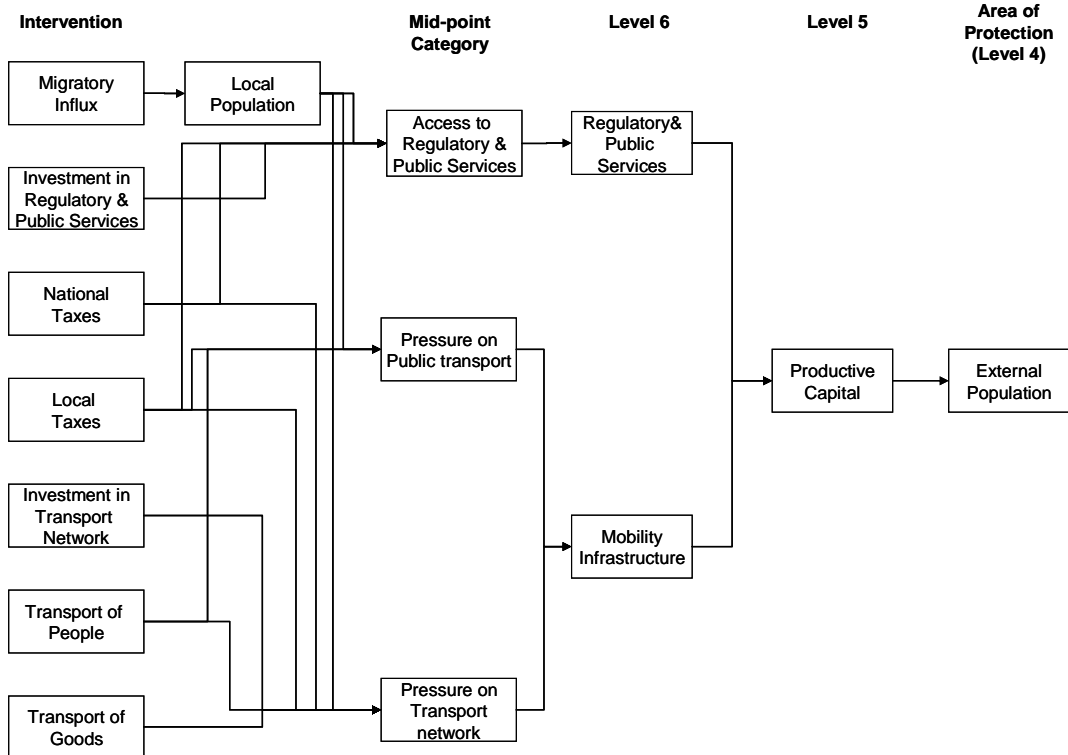
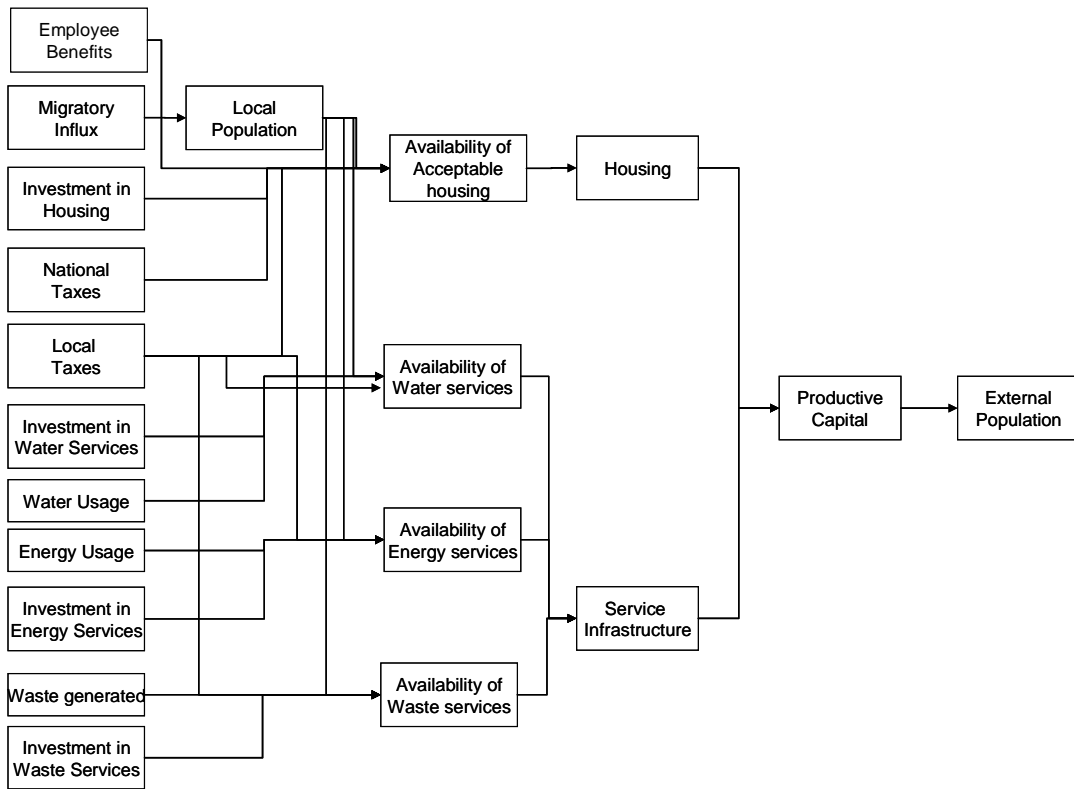
Appendix L

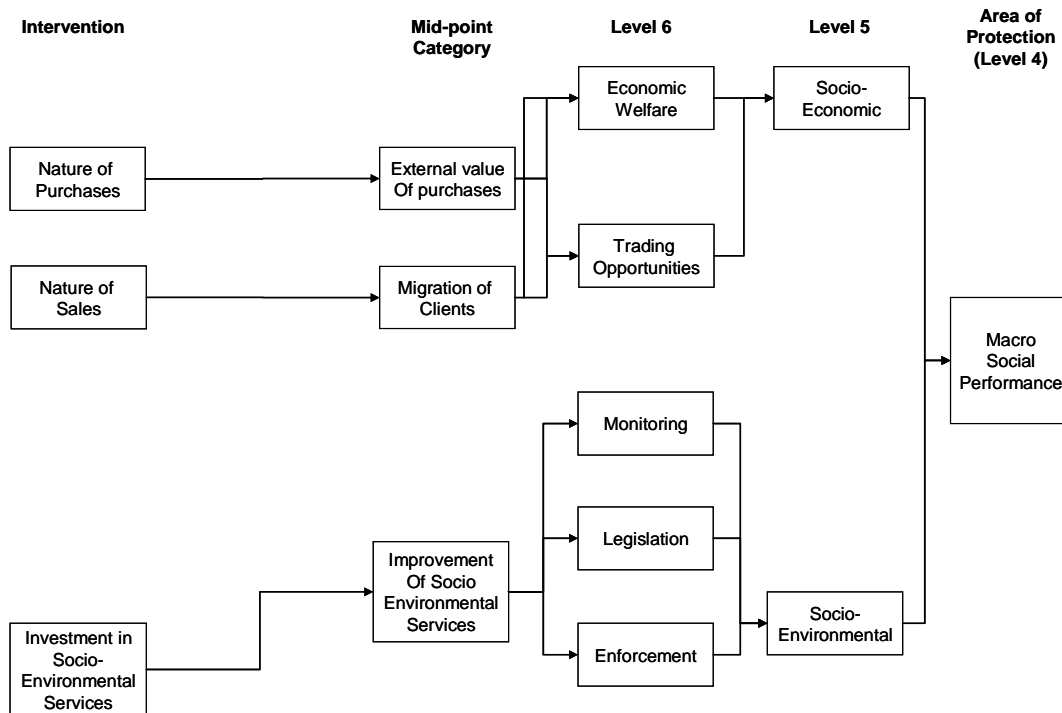
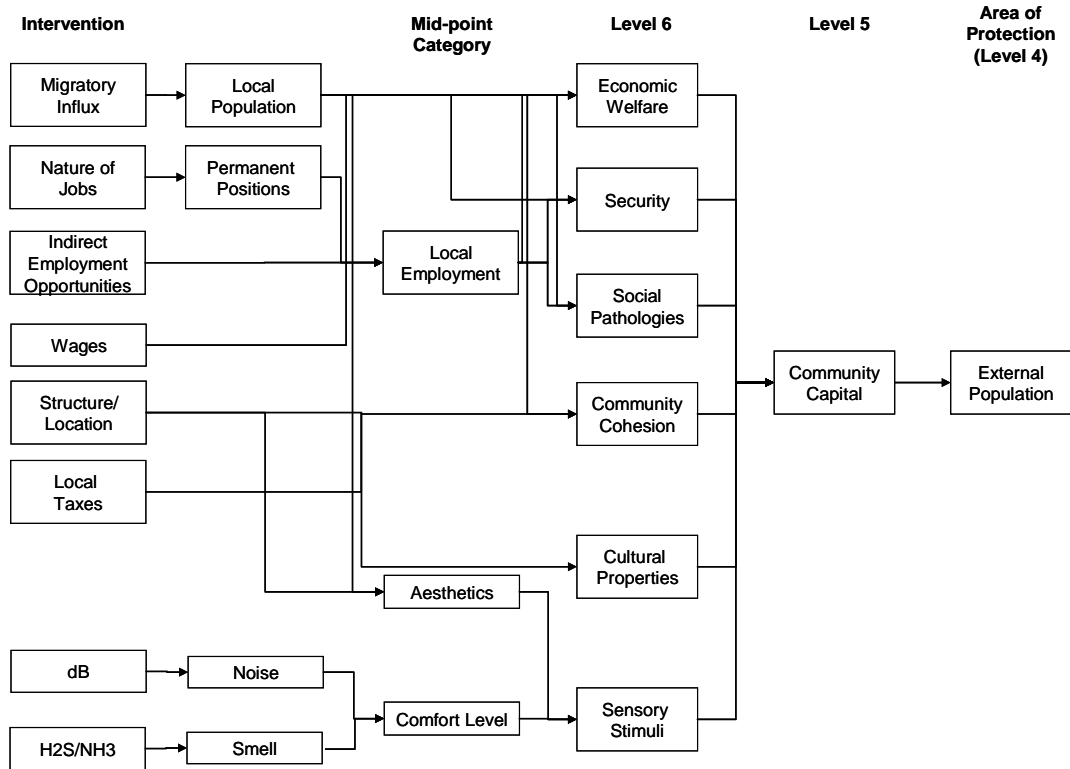
-
- Indicators measuring empowerment actions.
 - Risk Management
 - Identification of possible groups abusing stakeholder empowerment.
 - Mitigation actions to ensure stakeholders have the opportunity to provide input.
-

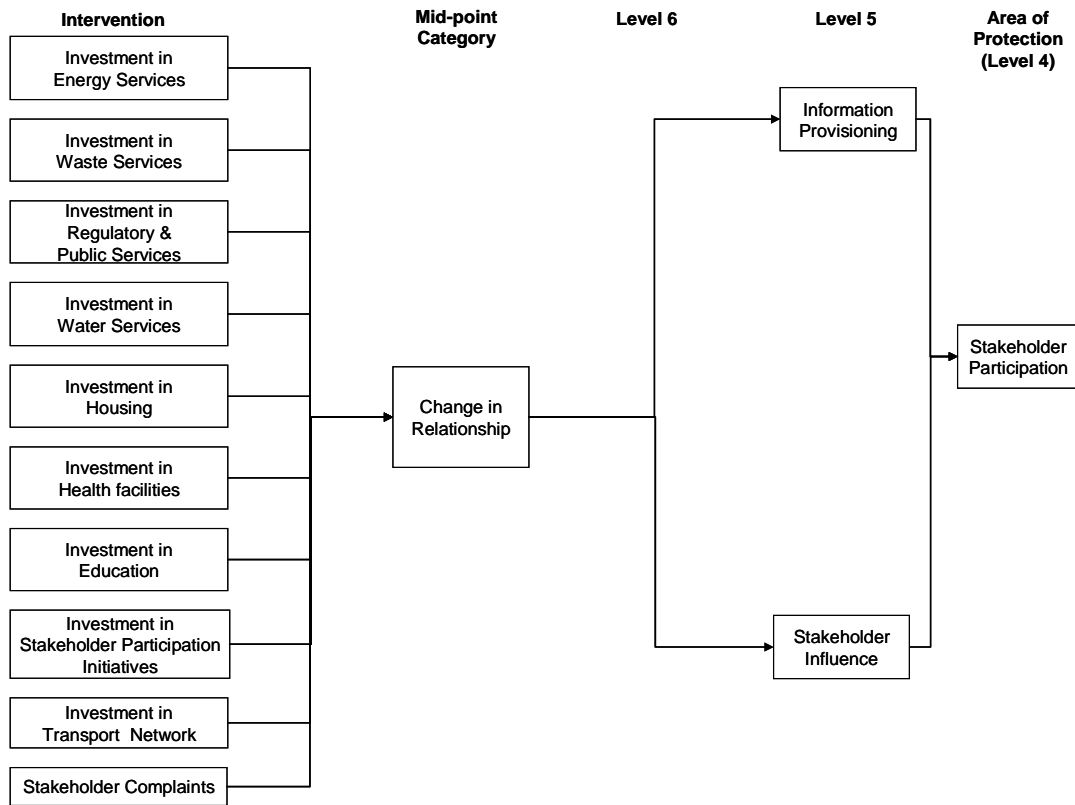
21. Appendix M: Causal Relationships

The causal relationships between the interventions and the areas of protection (level 4 of proposed social sustainable development framework) are shown in the following figures.









22. Appendix N: Delphi Technique Questionnaires

22.1 Questionnaire Round 1:

Respondent Number:

Information Availability for Indicators

Before which decision-point (gate) in the project life-cycle is the information available or can it be predicted?

Mid Point Category	Equivalence of	G1	G2	G3	G4	G5	G6
Permanent Positions	Number and type of jobs created						
Requirements to stabilize the situation	Health & Safety risks						
Knowledge Level	Number of specific skilled personnel required						
R&D Capacity	Cost spend on R&D						
Comfort Level	Environmental risks e.g. smells						
Aesthetics	Nuisance risks to public						
Local Employment	Percentage of jobs that can be filled by local people						
Local Population	Possible inflow of people						
Access to health facilities	Possible impact on health (inflow of people or investment)						
Access to Education	Possible impact on education (inflow of people or investment)						
Availability of acceptable houses	Project will invest in housing						
Availability of water services	Water Usage of project						
Availability of energy services	Energy Usage for project						
Availability of waste services	Waste generated by project						

Pressure on public transport services	Pressure on public transport services						
Pressure on transport network	Pressure on transport network by additional people transfers e.g. company buses						
Access to Regulatory & Public Services	Investment in regulatory or public services						
External value of purchases	Percentage of goods required for project that can be purchased locally						
Migration of clients	Possibility of clients migrating to project location						
Improvement of Socio-Environmental Services	Knowledge about whether the project should invest in macro social environmental aspects e.g. monitoring.						
Change in relationships	Information with regards to stakeholders						

22.2 Questionnaire Round 2

Respondent Number:

Information Availability for Indicators

- Please review the results from round 1. The specific gate at which information seems to be available is indicated.
- Please indicate whether you agree or disagree
- Please feel free to provide clarification or any additional comments in the last column.

Type of Information needed	Gate (at which it should be available although not 100% accurate)	Agree/Disagree	Comments
Number and type of jobs created	3		
Health & Safety risks	2		
Number of specific skilled personnel required	3		
Cost spend on R&D	2		
Environmental risks e.g. smells	2-3		
Nuisance risks to public	3		
Percentage of jobs that can be filled by local people	3		
Possible inflow of people	2		
Project will invest in housing	2		
Water Usage of project	2		
Energy Usage for project	2		
Waste generated by project	2		
Pressure on public transport services	2		

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix N

Pressure on transport network by additional people transfers e.g. company buses	2		
Percentage of goods required for project that can be purchased locally	3-4		
Possibility of clients migrating to project location	1		
Knowledge about environmental monitoring the project should invest in or legislation it should look at etc. Thus information about macro social environmental aspects	4		
Information with regards to stakeholders	2-3		
Number and type of jobs created	3		
Health & Safety risks	2		
Number of specific skilled personnel required	3		

23. Appendix O: Information Availability

The following table summarises information available from Statistics South Africa (StatsSA), the Municipal Demarcation Board as well as the State of Environment Report of the South African Department of Environmental Affairs and Tourism (DEAT). The following StatsSA publications are referred to:

- P0302 – Mid year Population Estimates
- Report 03-51-03: Documented Migration
- P8001: Economic Activity Survey
- P4141: Electricity generated and available for distribution
- P0318: General Household Survey
- Report 02-01-01: Occupational Survey
- P0275: Survey of Employment and Earnings
- P0441: Gross Domestic Product
- P0111.1-9: Income and Expenditure of households per province
- P0210: Labour Force Survey
- P0318: General Household Survey
- P7101: The Transport Industry, 2002
- P7142: Land freight transport
- P9114: Census of Municipalities
- P9115: Non-Financial Census of Municipalities
- P9119.2: National Government Expenditure
- P9120: Provincial government expenditure

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
<u>Statistics South Africa</u>				
Employed, Unemployed and Not Economically Active per Gender	Municipality	Census	5 yearly	Local
Work Status by Gender: Paid Employee; Paid Family Worker; Self-Employed; Employer; Unpaid Family Worker; Not Applicable.	Municipality	Census/ P0318	5 yearly / annually	Employment / Permanent
Employment according to population group and gender or major industrial group or by gender and population group to occupations or major industrial groups.	National	Report 02- 01-01	Periodically (1996)	Positions
Employment, vacancies and vacancy rates according to major occupational groups or major industry groups	National	Report 02- 01-01	Periodically (1996)	
Employment statistics by type, sector, population group, occupation, economic activity, highest level of education, gender	National/ Industry	P0210	Bi-Annually	
Employment statistics existence of written contract, terms of employment, paid leave status, trade union membership, medical aid/health fund contributions	National/ Industry	P0210	Bi-Annually	
Unemployment by age, population group, gender, duration of job seeking, length of time since last worked and industry in which they worked, highest level of education	National	P0210	Bi-Annually	
Number of employees and Gross earnings with percentage changes between subsequent quarters and years.	Industry	P0275	Quarterly	
Unemployed and not economically population by reason for not working and gender	National	P0210	Bi-Annually	
Population aged 66 years and older by type of economic activity, gender, population group, if working by main industry, occupation	National	P0210	Bi-Annully	
Education: Population aged over 20 by highest level of education, age, population group, gender	Provincial/ National	P0318	Annually	Access to Education

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
Education: Population aged 15 years and older by whether they can read and write, age, population group, gender	Province/ National	P0318	Annually	Access to Education
Education levels: Number of people in a specific category. Categories from: No schooling to Higher Degree, than Honours)	Municipality	Census	5 yearly	
Adult literacy rate (per gender, per population group)	Provincial	P0015	Published 2001	
Health: Medical Aid coverage by population group, age group and gender	Provincial/ National	P0318	Annually	Access to health facilities
Population: age, gender, population group	Provincial	P0302/ P0318	Annually	Local Population
Population: age, gender, population group	National	P0210/ P0318	Bi-Annually	
Life Expectancy at Birth	Provincial	P0015	Published 2001	Access to health facilities
Life Expectancy at Birth	National	P0302	Annually	
Migration streams within the country	Provincial	P0302	Annually	Local
Imigrant & Emigrant figures	National	Report 03- 51-03	Annually	Population
Type of energy used by households (gas, electricity, etc.)	Municipality	Census	5 yearly	Availability of
Volume of electricity available for distribution	National/ Provincial	P4141	Monthly	energy services

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
Volume of electricity imported, exported, produced and consumed in power stations and available for distribution	National	P4141	Monthly	Availability of energy services
Gross Domestic Product	Industry or Region	P0441	Annually / Quarterly	External Value of purchases
Real GDP per Capita	Provincial	P0015	Published 2001	
Turnover per year	Industry	P8001	Annually	
Net profit before providing for company tax and dividends at current prices	Industry	P8001	Annually	
Capital expenditure on new assets at current prices	Industry	P8001	Annually	
Book value of non-current assets at current prices	Industry	P8001	Annually	
Profitability, Current and Acid test ratio	Industry	P8001/ P0441	Annually	
Gross salaries & wages	Industry	P8001	Annually	Local Employment
Company tax paid	Industry	P8001	Annually	All human and productive capital mid point categories
Purchases	Industry	P8001	Annually	External Value
Foreign Trade: Volume and Unit Values	National	Discontinued, figures of 1997 available		of Purchases
Rental of land, buildings and other structures, including water and electricity payments	Industry	P8001	Annually	

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
Annual household expenditure according to income group, size, occupational group of head of household, type of dwelling, expenditure group	Provincial	P0111	5 yearly	Access to health facilities
Annual household expenditure on specific items	Provincial	P0111	5 yearly	or Education
Household by dwelling, sources of water, electricity, etc.	National	P0318	Annually	Availability of energy services
Household Transport Statistics: Time it takes to reach certain destinations	National	P0318	Annually	Pressure on public transport services
Number of people transported by bus or train	National	Discontinued, figures from 1997 available		
Volume of Goods Transported in the Transport Industry by type of transport	National	P7101	Every 3 -5 years	Pressure on transport network
Volume of goods transported by road	National	P7142	Monthly	
Provincial Profiles: Geography, demographics, labour, education, households, health, safety and security, politics, climate	Provincial	Report: 00-91-01 to 00-91-09	Published in 2004	All human and productive capital mid-point categories
Analysis of acquisition of fixed assets: Housing Services & Income and Expenditure: Housing Services	Municipalities by province	P9114	Annually	Availability of acceptable houses
Analysis of acquisition of fixed assets: Electricity & Gas Services & Income and Expenditure: Electricity & Gas Services	Municipalities by province	P9114	Annually	Availability of energy services
Analysis of acquisition of fixed assets: Sewerage and sanitation services	Municipalities by province	P9114	Annually	Availability of waste services

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Analysis of acquisition of fixed assets: Passenger transport services & Income and Expenditure: Passenger transport services	Municipalities by province	P9114	Annually	Pressure on public transport services
Analysis of acquisition of fixed assets: Water Services & Income and Expenditure: Water Services	Municipalities by province	P9114	Annually	Availability of water services
Income and Expenditure: Health & ambulance services	Municipalities by province	P9114	Annually	Access to health facilities
Income and Expenditure: Road services	Municipalities by province	P9114	Annually	Pressure on transport network
Income and Expenditure: Sanitation & refuse removal services	Municipalities by province	P9114	Annually	Access to waste services
Income and Expenditure: Sewage services	Municipalities by province	P9114	Annually	Access to waste services
Income and Expenditure: Traffic services	Municipalities by province	P9114	Annually	Pressure on transport network
Details regarding water supply in each province	Provincial	P9115	Annually	Availability of water services
Electricity consumption and payment in each province	Provincial	P9115	Annually	Availability of energy services
Total expenditure from the National Revenue Fund per financial year according to type of service	National	P9119.2	Annually	All External Population Categories

Sustainable project life cycle management: Development of social criteria for decision-making
Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
Total expenditure from the National Revenue Fund per financial year according to type of service	Provincial	P9120	Annually	All External Population Categories
Total expenditure on environmental protection	Provincial	P9120	Annually	Improvement of Socio-Environmental Services
<i>Municipality Demarcation Board</i>				
Population by population group	Municipality	Census	5 yearly	Local Population
Population by gender and age groups	Municipality	Census	5 yearly	Access to education
Education institutions attended by 5-24 years old	Municipality	Census	5 yearly	
Highest Education Levels attained by over 20 years old	Municipality	Census	5 yearly	
Labour force by employed, unemployed, not-economically active	Municipality	Census	5 yearly	Permanent Positions/Local Employment
Employment by industry	Municipality	Census	5 yearly	
Occupation breakdown	Municipality	Census	5 yearly	
Monthly Income breakdown	Municipality	Census	5 yearly	
Population breakdown by first language	Municipality	Census	5 yearly	
Disability statistics	Municipality	Census	5 yearly	
Birthplace & Citizenship Statistics	Municipality	Census	5 yearly	Local Population

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Information Available	Level	Source	Frequency of Updates	Relevant Mid-point Category
Mode of travel to work and school	Municipality	Census	5 yearly	Pressure on public transport network
Dwelling types	Municipality	Census	5 yearly	Availability of acceptable
Household size	Municipality	Census	5 yearly	houses
Number of rooms	Municipality	Census	5 yearly	
Source of electricity used in households	Municipality	Census	5 yearly	Availability of energy services
Household Refuse statistics	Municipality	Census	5 yearly	Availability of waste services
Household sanitation statistics	Municipality	Census	5 yearly	Availability of waste services
Household Telephone statistics	Municipality	Census	5 yearly	
Source of water used in households	Municipality	Census	5 yearly	Availability of water services
Annual Household Income Distributions	Municipality	Census	5 yearly	
<i>State of the Environment Report (National and Provincial)</i>	Level	Indicator Number	Frequency	Relevant Mid-point Category
Access to Sanitation	National	HW14	Annually	Availability of waste services

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Description	Level	Indicator Number	Frequency	Relevant Mid-point Category
Access to water	National	HW13	Annually	Availability of water services
Adult literacy rate	National	HW08	5 Yearly	Access to education
Available landfill lifespan	National	WM08	5 Yearly	Availability of waste services
Employment rate	National	HW09	Annually	Permanent Positions/ Local Employment
GDP per capita	National	HW06	Annually	External value of purchases
HW11 HIV/Aids incidence	National	HW11	Annually	Access to health facilities
Household Energy Use	National	HW12	Annually	Availability of energy services
Life Expectancy	National	HW07	5 Yearly	Access to health facilities

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix O

Description	Level	Indicator Number	Frequency	Relevant Mid-point Category
Living Space available per household	National	HW03	5 Yearly	Availability of acceptable housing
Population growth rate	National	HW10	5 Yearly	Local
Proportion of urban area in South Africa	National	HW05	5 Yearly	Population
Urban & Rural Population	National	HW04	5 Yearly	
<i>Compensation Commissioner: Compensation for Occupational Injuries and Diseases Act, 1993: Report on the 1999 Statistics</i>	Level		Frequency	Relevant Mid-point Category
Number of Accident by Extent of Disablement	National		Unknown	Possible Health &
Average actual number of days lost per extent of disablement	National		Unknown	Safety Incidents
Number of accidents according to age group	National		Unknown	
Sex and conjugal state of injured persons	National		Unknown	
Number and Percentage of Accidents according to period of absence and extent of disablement	National		Unknown	
Number of cases by location of injury, permanent disablement, fractures and traumatic amputations	National		Unknown	
Cost of accident by industrial classification and extent of disablement	National		Unknown	
Extent of disablement according to industry	Industry		Unknown	
Accident frequency rate per industry	Industry		Unknown	
Accident severity rate per industry	Industry		Unknown	
Fatal accidents per industry	Industry		Unknown	
Injured workmen according to magisterial district or Province	Provincial/ Magisterial District		Unknown	

24. Appendix P: Acrylic Fibre Plant - Information

24.1 Project Information

Table 24-1: Project Information

		<i>96/97</i>	<i>97/98</i>	<i>98/99</i>	<i>99/00</i>	<i>Average</i>
Production						
Tons (36000 * 80% efficiency)		28800	28800	28800	28800	28800
kg		28800000	28800000	28800000	28800000	28800000
Energy Usage						
Electricity	kWh/kg	1.53	1.91	1.71	1.57	1.68
Electricity Total	kWh	44064000	55008000	49248000	45216000	48384000
	MWh	44064	55008	49248	45216	48384
	GWh	44.064	55.008	49.248	45.216	48.384
Per Month	GWh	3.672	4.584	4.104	3.768	4.032
Water Usage						
Water Used	litre/kg	49.6	44.7	50.1	54.1	49.625
Water Total	Litre	1428480000	1287360000	1442880000	1558080000	1429200000
Per Year	Kiloliter	1428480	1287360	1442880	1558080	1429200
Per Month		119040	107280	120240	129840	119100
Coal Usage						
Coal/Production	kg/kg	1.59	1.45	1.8	1.6	1.61
Total Coal	kg	45792000	41760000	51840000	46080000	46368000

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix P

		<i>96/97</i>	<i>97/98</i>	<i>98/99</i>	<i>99/00</i>	<i>Average</i>
Atmospheric Emissions						
SO ₂	kilo ton	0.56	0.55	0.372	0.469	0.48775
Nox	kilo ton	0.121	0.117	0.095	0.111	0.111
VOC	kilo ton	0.005	0.006	0.004	0.005	0.005
Solid Waste						
General/Domestic	1000m ³	4.2	3.1	1.4	1.6	2.575
General/Domestic	tons	DWAF minimum requirements Waste Density: 0.6 tons/m ³ [P1]				1545
Industrial/Non Hazardous	1000m ³	3.4	3.2	1.6	2.5	2.675
Total	1000m ³	7.6	6.3	3	4.1	5.25
Health & Safety						
Disabling Injuries	nr	7	11	7	1	6.5
Disabling Injury Rate	no/200k hour	2.1	4.1	3	0.3	2.375
Work hours lost due to Injury	hours	731	560	458	152	475.25
Complaints & Incidents						
Complaints	nr	1	1	0	0	0.5
Plant Incidents (spillages)	nr	2	0	0	1	0.75
Turnover	Annually (million Rand)	500	500	500	500	500
Employees	Number	250	250	250	250	250

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix P

		<i>96/97</i>	<i>97/98</i>	<i>98/99</i>	<i>99/00</i>	<i>Average</i>
Water Effluent						
Average conductivity for year	µS/cm	4651	3808	3833	3643	3983.75
Average Acrylonitrile for year	mg/litre	108	84	69	71	83
Average NaSCN for year	mg/litre	195	291	290	186	240.5
Steam Use						
Steam/Production	kg/kg	12.1	11	13.7	12.5	12.325
Steam Use	kg	348480000	316800000	394560000	360000000	354960000

Source: Sasol, *Sustainable Development: Sasol Safety, Health and Environmental Report 2000 (for the period 26 June 1998 to 25 June 2000)*, Sasol, Johannesburg, 2000.

24.2 Social Footprint Information:

Table 24-2: Social Footprint Information

Employment & Unemployment

	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Percentage</i>
eThekwini (STATSSA Census 2001)				
Employed	445 689	337 244	782 933	36.95 %
Unemployed	277 677	313 347	591 024	27.90%
Not Economically Active	292 944	452 009	744 953	35.15%
Durban South Basin (SEA)				
Unemployed/Not economically active			208 000	52%

Gross Domestic Product (Kwa Zulu Natal Region) Unit: R million (STATSSA)

<i>Year:</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>Average</i>
R million	95 535	105 117	112 461	119 768	132 354	113 047

Air Emissions (eThekwini) (Directly from Council)

<i>Emission</i>	<i>Year</i>	<i>Tons/year/ha</i>	<i>Total area (ha)</i>	<i>Tons/year</i>	<i>Kilotons/year</i>
SO ₂	1999	0.4	136 235	54 494	54.50
NO _x	1999	0.4	136 235	54 494	54.50

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix P

Water Usage (eThekweni) (Directly from Council)

<i>Unit</i>	<i>97/98</i>	<i>98/99</i>	<i>99/00</i>	<i>Average</i>
Without Water loss taken into consideration				
Kilolitre	284751122	279089275	276607942	280149446.3
Mega litre	284751.12	279089.28	276607.94	280149.45
With water loss taken into consideration				
Kilolitre	170850673.2	167453565	165964765.2	168089667.8
Mega litre	170850.67	167453.57	165964.77	168089.67

Electricity Usage (eThekweni) (Directly from Council)

<i>Unit</i>	<i>96/97</i>	<i>97/98</i>	<i>98/99</i>	<i>99/00</i>	<i>Average</i>
KWh	8941330707	9183151356	9073412900	9195922772	9098454434
GWh	8941.33	9183.15	9073.41	9195.92	9098.45

Durban South Basin Statistics: (SEA)

<i>Description</i>	<i>Unit of Measurement</i>	<i>Measurement/Value</i>
Traffic	Vehicles entering in peak hours (07:00-09:00 am)	19000
Education	Pupil : Teacher Ratio	40:1
Health	Average distance to health facilities	3 kilometres

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix P

Security	Police Stations : Residents ratio	6:400 000
Waste	Domestic waste generated per year	45 000 tons
Hazardous waste	Percentage of province's hazardous waste generated in area	50%

eThekwini Statistics:(Council Website)

<i>Description</i>	<i>Unit of Measurement</i>	<i>Measurement/Value</i>
Population	Number of people	3 090 121
Public Transport Seats	Number per 1000 people	158

24.3 References

[P1] Department of Water Affairs and Forestry, *Waste Management Series: Minimum Requirements for Waste Disposal by Landfill, Second Edition*, Pretoria, DWAF, 1998.

25.2 Pre-Feasibility Phase

25.2.1 Social Questionnaire

Questionnaire						
		Yes	No	Uncertain	Deliverable	
1	Are technologies considered in line with compan strategy (technology intensive vs employee intensive)?					
2	Can Health & Safety practices for the proposed technologies be developed that are in line with the company strategy/standards?					
3	Are additional investments in Research & Development required to make technology work?					
4	Will the project have to invest in training & education to ensure that there will be capable employees to operate the technology or are skill available locally?				Capacity Requirements	
5	Will the project require additional monitoring stations?					
6	Are there any legislation that oppose the project or that needs to be developed for the project?				List of relevant legislation	
7	Have a strategy and plan for stakeholder engagement been finalised?				Stakeholder Engagement Plan	
7.1	Identify any possible problematic stakeholders which can require additional attention					
8	Will the project increase any of the following sensory stimuli:					
	- noise					
	- smell					
	- physical appearance of plant/aesthetics					
9	Will the project decrease any of the following sensory stimuli:					
	- noise					
	- smell					
	- physical appearance of plant/aesthetics					
10	Can the project involve the relocation of people?					
10.1	If yes, develop an action plan to handle relocation project				Relocation Action Plan	
11	Possible risks to External Population due to influx of people & construction of asset					
	Access to Health Facilities					
	Access to Education Facilities					
	Availability of Acceptable houses					
	Availability of water services					
	Availability of Energy Services					
	Availability of Waste Services					
	Additional burden on transport network					
		Use the following risk matrix to assign values.				
	Likelihood of Occurrence	High	R	R	MP	K
		Substantial	R	R	MP	MP
		Moderate	I	R	T	T
		Low	I	R	T	T
			Low	Moderate	Substantial	High
		Importance of Risk				
		K= Killer Concern/Assumption R= Review and Reconsider MP = Modify Plan – Take action by mitigating I = Ignore T=Triggers (Establish indicator, if reached address impact by measures of compensation, etc.)				

25.2.2 Social Checklist (for use at the end of the phase)

Checklist			
<i>Has the following been done?</i>	Yes	No	Uncertain
1 Strategies known to Design team			
2 R&D Requirements clarified			
3 Capacity Requirements clarified			
4 Legislative and Monitoring Requirements clarified			
5 Stakeholder Engagement Plan Developed/Designed			
6 Possible impacts of concern identified.			

25.3 Feasibility Phase

25.3.1 Social Questionnaire

Questionnaire (Part A)

		Yes	No	Uncertain	Deliverable
1	Has the scope for the SIA been compiled?				Scope for SIA
2	Will this project create employment opportunities?				Number and type of employment opportunities
2.1	If yes, will these employment opportunities be permanent or temporary?				
2.2	Please complete the following for each type of employment:				
	- Number of employments:				
	- Is special skill training required?				
	- Can local labour sources be used?				
3	Will this project destroy employment opportunities?				
3.1	If yes, please answer the following questions:				
	- Number of employments				
	- What skill level employments are destroyed?				
	- Can local labour sources be affected?				

Appendix Q

Questionnaire (Part B)					
		Yes	No	Uncertain	Deliverable
4	Is the rand value of employment compensation known?				
4.1	If yes, what is it?				
5	Are the project team familiar with the equity & diversity strategy of the company?				
5.1	If yes, can the project implementation adhere to the strategy in terms of available skill levels for employment opportunities?				
5.2	If not, can training or education bridge the gap?				
6	Are the project team familiar with the company strategy with regards to preferred labour sources?				
7	Are the company capable to develop and implement Health & Safety Practices as required by the proposed technologies?				
7.1	If not, can training or education bridge the gap?				
8	Risk of Technology in terms of Health & Safety Incidents Impacts Descriptions (using DEAT method & Worldbank method)				Description of possible impacts
9	Are additional investments in Research & Development required to make technology work?				
9.1	If yes, what is the predicted cost?				
10	Will the project have to invest in training & education to ensure that there will be capable employees to operate the technology or are skill available locally?				Capacity Requirements
10.1	If yes, are instructors, etc available?				
10.2	If yes, what is the time and cost implications likely to be?				Capacity Requirements
11	Will the project have to invest in housing?				
11.1	If yes, has an action plan been developed?				Housing Action Plan
12	What load will be placed on the service infrastructure? (Water, Energy, Waste)				Service Requirements
12.1	Can the service infrastructure handle the load?				
12.2	If no, action plan necessary				
13	Will the project require the building of temporary infrastructure?				
14	What load will be placed on the mobility infrastructure (networks & public transport)?				
14.1	Can the mobility infrastructure handle the load?				
14.2	If no, action steps must be taken.				
15	External Population - describe potential impacts in terms of DEAT Method				Description of possible impacts
16	Can the project involve the relocation of people?				
16.1	If yes, develop an action plan to handle relocation project				Relocation Action Plan
17	Does the project have any potential economic benefits (other than jobs) for the local community?				
17.1	If yes, please list these potential benefits				
18	Will the project require additional monitoring stations?				
19	Are there any legislation that oppose the project or that needs to be developed for the project?				List of relevant legislation

Questionnaire (Part C)						
		Yes	No	Uncertain	Deliverable	
20	Has the stakeholder engagement plan been activated?					
20.1	If yes, how many information sessions have been held?					
21	Are there any resistance to the project at present?					
21.1	If yes, please describe and rate risk					
	Likelihood of Occurrence	High	R	R	MP	K
		Substantial	R	R	MP	MP
		Moderate	I	R	T	T
		Low	I	R	T	T
			Low	Moderate	Substantial	High
	Importance of Risk K= Killer Concern/Assumption R= Review and Reconsider MP = Modify Plan – Take action by mitigating I = Ignore T=Triggers (Establish indicator, if reached address impact by measures of compensation, etc.)					
20.2	Is there a possibility that a group can be abusing the stakeholders to promote their ideas?					

25.3.2 Social Checklist (for use at the end of the phase)

Checklist				
	<i>Has the following been done?</i>	Yes	No	Uncertain
1	Impact Descriptions Completed			
2	Equity and Labour Source Strategies Communicated			
3	Possible resistance groups identified			
4	List of possible legislation			
5	Gaps in business that needs to be adressed identified			
6	Action plans to ensure feasibility in terms of service resources			
7	Compile Scope for SIA			

Sustainable project life cycle management: Development of Social Criteria for Decision-Making

Appendix Q

25.3.3 DEAT Method that needs to be applied in Feasibility Phase

Criterion			Health & Safety Incidents	Health	Education	Sensory Stimuli			Security	Cultural Properties	Economic Welfare		Social Pathologies	Social Cohesion	
Impact Description			Risk inherit in technology for Health & Safety Incidents	Influx of People on access to health facilities	Influx of People on access to education facilities	Noise	Smells/ Odours	Aesthetics	Influx of people - increase in crime		Indirect employment opportunities	Influx of people	Influx of People	Resettlement?	Influx of people (Demographic changes)
Spatial Scale of Impact	High	Widespread: Regional/national/International													
	Medium	Beyond site boundary - Local													
	Low	Within site boundary													
Intensity/ Severity of Impact	High	Destruction or serious disturbance													
	Medium	Complete change in conditions													
	Low	Minor changes													
Duration of Impacts	High	Long term - Permanent or longer than 15 years													
	Medium	Medium term - 5 to 15 years													
	Low	Short term - 0 to 5 years													
Mitigatory Potential of Impacts	High	High potential to mitigate to a level of insignificant effects.													
	Medium	Potential to mitigate but mitigation may still not prevent some negative effects.													
	Low	Little or no mechanism to mitigate													
Acceptability of impacts	High	Unacceptable - Abandon project or serious redesign													
	Medium	Manageable - with regulatory controls													
	Low	Acceptable - no risk to public health													
Degree of Certainty	Definite	More than 90% sure - substantial supportive data exist to verify assessment.													
	Probable	Over 70% sure													
	Possible	Only over 40% sure													
	Unsure	Less than 40% sure													
Status of Impacts	Positive	A benefit to the community													
	Negative	A cost or risk to community													
	Neutral	No impact on community													
Legal Requirements:	Please state any specific legal or permit requirements that are relevant to the impact.														

25.4 Development Phase

25.4.1 Social Questionnaire

Questionnaire (Part A)					
		Yes	No	Uncertain	Deliverable
1	Will this project create employment opportunities?				Number and type of employment opportunities
1.1	If yes, will these employment opportunities be permanent or temporary?				
1.2	Please complete the following for each type of employment: - Number of employments:				
	- Is special skill training required?				
	- Can local labour sources be used?				
	- What steps have been taken to ensure that equity and human rights are guaranteed in the contract?				
	- For temporary jobs: What steps are in place to ensure that the temporariness of the jobs have been thoroughly communicated?				
2	Will this project destroy employment opportunities?				
2.1	If yes, please answer the following questions:				
	- Number of employments				
	- What skill level employments are destroyed?				
	- Can local labour sources be affected?				
	- What steps have been taken to communicate and facilitate the retrenchment?				
	- What action plans have been developed to ensure that retrenched employees have skills to rely on?				
3	What is the financial value of employment compensation for new employees?				
4	Are the project team familiar with the equity & diversity strategy of the company?				
4.1	If yes, can the project implementation adhere to the strategy in terms of available skill levels for employment opportunities?				
4.2	If not, can training or education bridge the gap?				
5	Are the project team familiar with the company strategy with regards to preferred labour sources?				
5.1	If yes, can the project implementation adhere to the strategy?				
5.2	If not, why not and what can be done to ensure adherence?				
6	Have the necessary Health and Safety practices been developed to ensure safe operation of planned technology?				Health & Safety Practices
6.1	Are a training schedule in development to ensure workers know the practices?				Training Schedule
7	Will the project develop new skills in the community & company?				
8	If the project require additional monitoring stations is it planned for and feasible to construct?				
9	If there any legislation that oppose the project or that needs to be developed for the project have it been addressed and is everything in order to pursue project?				
10	Does a plan to enforce environmental standards on suppliers and contractors been developed or adopted?				Environmental Enforcement Plan

Questionnaire (Part B)					
		Yes	No	Uncertain	Deliverable
11	Are the stakeholder views on the project known and known to all personnel involved?				
12	How many information sessions took place with groups of people or all stakeholders?				
13	Are there any unhappy stakeholders that threatens the project?				
14	If the project involve resettling or relocation, has the plan been accepted by the community?				
15	Has the SIA been completed?				
15.1	If yes, has the SIA identified any critical social concerns?				
16	Will the project have to invest in housing?				
16.1	If yes, has an action plan been developed?				Housing Action Plan
17	Is the predicted impact on the following criteria according to the SIA known?				
	<u>Criterion</u>				<u>Units of Equivalence to express impact</u>
	Health & Safety Incidents				Risk of Health & Safety Incidents according to Worldbank matrix
	Health				
	Education				Qualitative description of what predicted impact can be
	Housing				
	Service Infrastructure				Influence on Availability of water services, energy services and waste services by taking additional loads into consideration
	Mobility Infrastructure				Influence on mobility structure due to additional loads being transported and additional people
	Sensory Stimuli				Impact on ambient noise and odour levels. Qualitative description of aesthetics
	Security				Qualitative description of what predicted impact can be
	Cultural Properties				Qualitative description of what predicted impact can be
	Economic Welfare				Indirect employment opportunities and additional employment opportunities. Predicted increase in spending in community
	Social Pathologies				Qualitative description of what predicted impact can be
	Social Cohesion				Qualitative description of what predicted impact can be
	MSP:Economic Welfare				Contribution to GGP and purchases that will take place regionally or nationally
	MSP: Trading Opportunities				Qualitative description of what predicted impact can be

25.4.2 Social Checklist (for use at the end of the phase)

Checklist				
<i>Has the following been done?</i>		Yes	No	Uncertain
1	Social Impact Assessment			
2	Identify any social areas of concern			
3	Health & Safety Practices Training Schedule			
4	Environmental Enforcement Plan			

25.5 Execution & Testing Phase

25.5.1 Social Questionnaire

Questionnaire (Part A)					
		Yes	No	Uncertain	Deliverable
1	Have the temporariness of certain employment opportunities been communicated during the appointment process?				
2	Are minimum wages as specified by the country or the company's strategy adhered to?				
3	Have disciplinary and security practices been adopted?				
4	Does all employees have employee contracts according to the law of the country?				
5	Has the equity strategy been considered during the appointment of employees?				
6	Does the permanent employee appointments adhere to the equity strategy or policy?				
7	Has the labour source strategy or policy of the company been considered during the appointment process?				
8	Does the permanent employee appointments adhere to the labour source strategy or policy?				
9	Have the necessary Health & Safety training and communication took place to ensure Health & Safety readiness and alertness?				
10	Are measures in place to measure health & safety incidents?				
11	Have skills of temporary personnel been developed or improved?				
12	Has training etc been scheduled for new capabilities that needs to be developed?				

Questionnaire (Part B)					
		Yes	No	Uncertain	Deliverable
13	Are measures in place to measure actual impacts on the health of the external population?				
14	Are adequate housing facilities available for the influx of people?				
15	Can the service infrastructure handle the additional load?				
15.1	If not, what other options can be explored to mitigate the impact				
16	Can the mobility infrastructure handle the additional load?				
16.1	If not, what other options can be explored to mitigate the impact				
17	What steps will be taken to ensure that temporary infrastructure does not become permanent or are sufficient to serve as permanent infrastructure?				
18	Are regulatory services kept informed of progress?				
19	Are measures in place to monitor impacts on sensory stimuli?				
20	Is the company taking any measures to assist with induced social pathologies?				
21	Are environmental standards enforced on suppliers and contractors?				
22	How many information sessions took place with groups of people or all stakeholders?				
23	Are all possible steps taken to keep stakeholders informed?				

25.5.2 Social Checklist (for use at the end of the phase)

Checklist				
	<i>Has the following been done?</i>	Yes	No	Uncertain
1	Appointments have been made in accordance with equity and labour source strategy			
2	Disciplinary & Security Practices have been adopted			
3	Measures in place to measure impacts internally and externally			
4	Health & Safety Training and capacity development training have been scheduled and took place			

25.6 Launch Phase

25.6.1 Social Questionnaire

Questionnaire					
		Yes	No	Uncertain	Deliverable
1	Will the asset rely on the functional departments of the company or will it create its own functional departments?				
1.1	If not,				
1.1.1	Have the new asset adopt disciplinary and security practices?				
1.1.2	Are a standard for Employee Contracts in place for future appointments?				
1.1.3	Are an equity strategy or policy adopted and measures in place to assess adherence there to?				
1.1.4	Are a labour source strategy or policy adopted and measures in place to assess adherence there to?				
1.1.5	Are HS practices well documented to ensure continues education/improvement?				
1.1.6	Are a set of measures developed to track Health & Safety Performacne & Incidents?				
1.1.7	Is there a R&D strategy?				
1.1.8	Are their exisiting or planned Career Development paths for employees ?				
1.1.9	Are measures in place to measure impacts on external population?				
1.1.10	Has CSR projects been considered for the long term?				
1.1.11	Has a strategy to build long-term stakeholder relationships been developed?				
1.1.12	Is there a plan in place to ensure enforcement of environmental standards on suppliers and contractors?				

25.6.2 Social Checklist (for use at the end of the phase)

Checklist				
	<i>Has the folowing been done?</i>	Yes	No	Uncertain
1	Adopting strategies and business practices for future functioning as an independent unit.			
2	Initiation of actions to build a long-terms stakeholder relationships with stakeholder.			

26. Appendix R: Social Sustainability Tool for Projects (Internet Version)

26.1 Website Layout

The webpage consists of three main sections, namely:

- the project life cycle section: the section contains gate questions and links to questionnaires and checklists for each phase. It also graphically shows all social aspects relevant to the phase;
- the library section: it contains links to documents discussing social aspects as well as links to related websites, and
- the evaluation tool section: the section shows proposed gate questions which can guide decision-makers as well as a link to an Excel spreadsheet that can be of assistance when calculating SII.

26.2 Screen Captures of Website

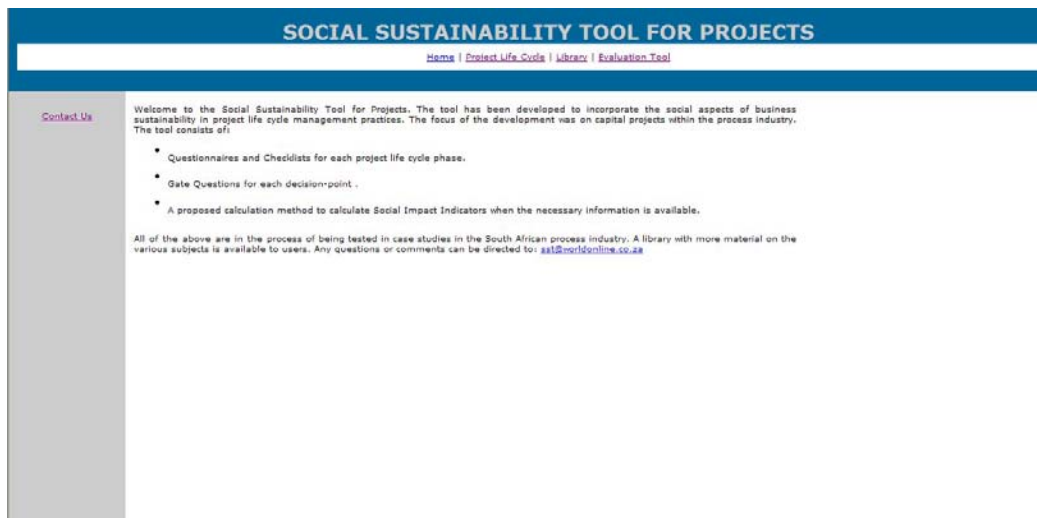


Figure 26-1: Homepage

The main page contains links to the three sections of the website as well as a link to contact the author.

26.2.1 Project Life Cycle Phases: Examples

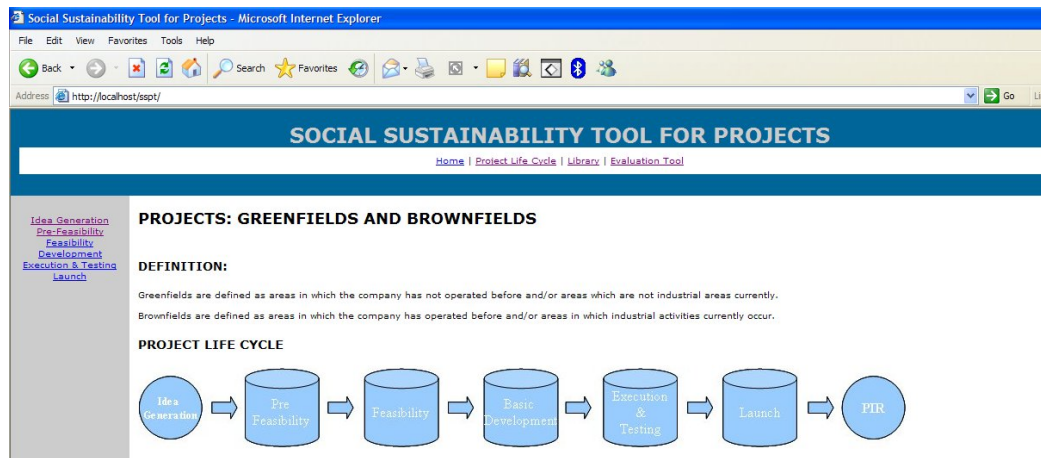


Figure 26-2: Homepage of Project Life Cycle Section

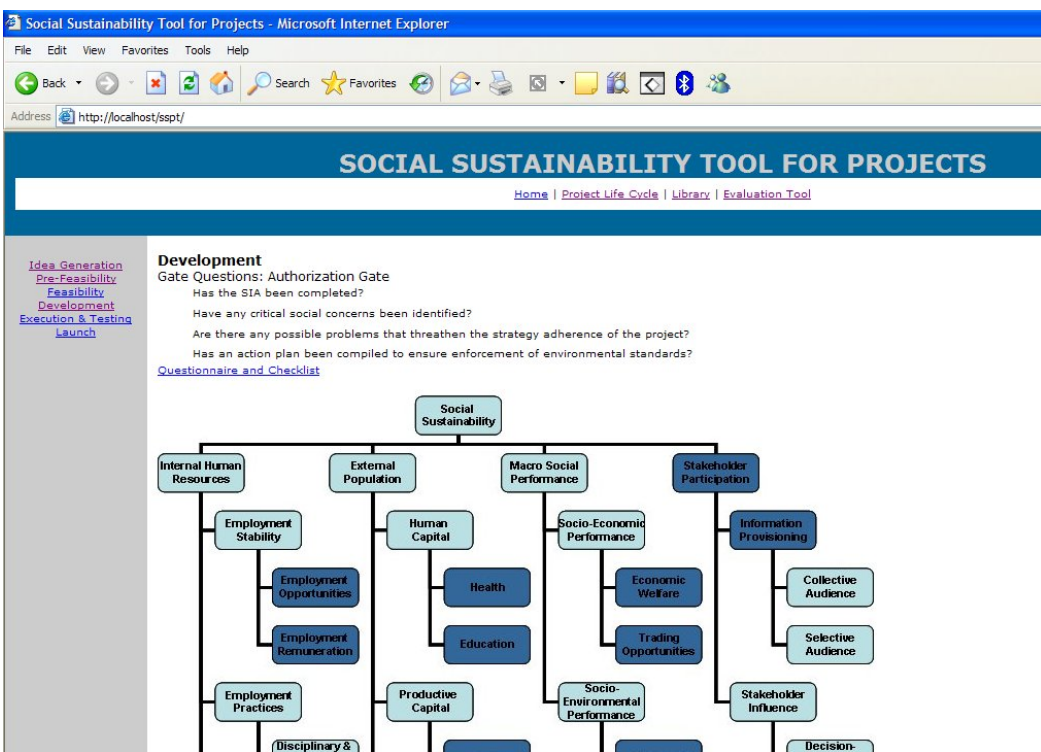


Figure 26-3: Example of webpage for each life cycle phase: Development

The main page contains links to individual pages for each life cycle phase. The webpage of each phase contains gate questions, a link to an example of a social questionnaire and checklist which can be used during the phase as well as a picture of the social sustainability framework indicating the relevant social aspects in the phase.

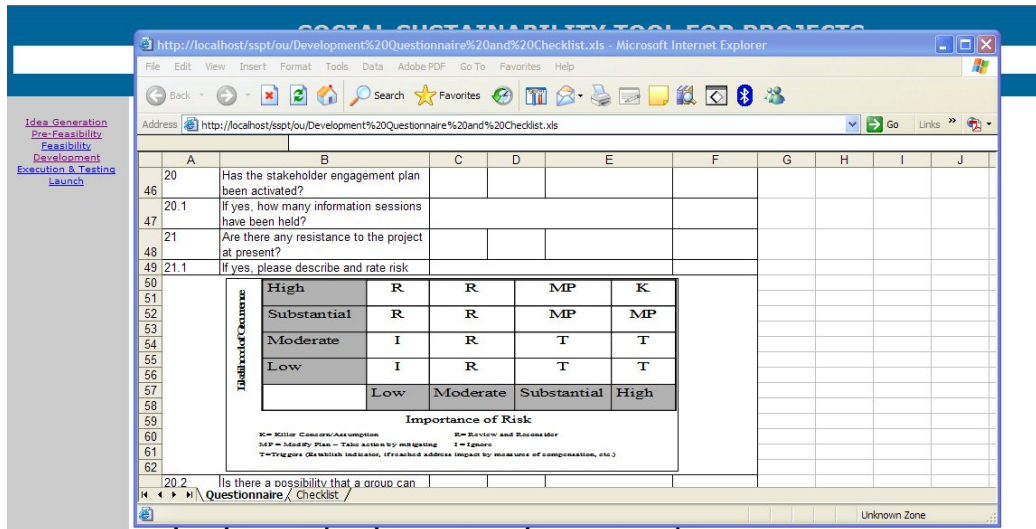


Figure 26-4: Link to Excel Checklist and Questionnaire

The questionnaire link opens an Excel workbook which contains a worksheet for the questionnaire and a worksheet for the checklist. If greenfield projects require additional steps in the specific phase an extra worksheet is added in the file which contains specific guidelines and/or hints with regards to these steps.

26.2.2 Library Section

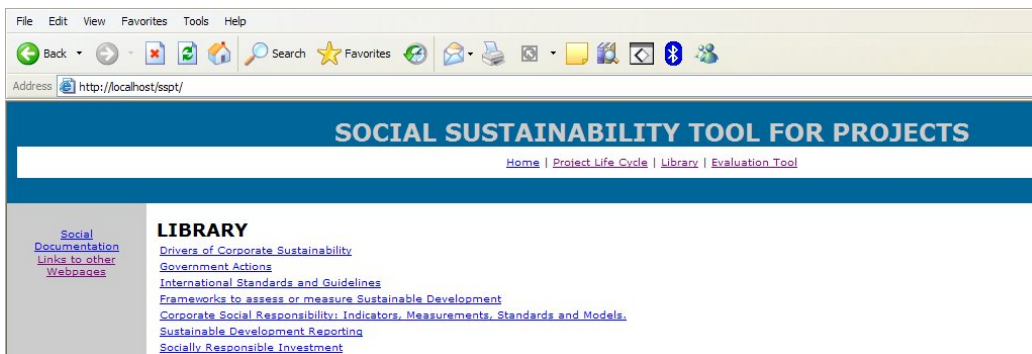


Figure 26-5: Library Main Page

The library page contains links to documents (in pdf format) discussing various social sustainability aspects. The library section also contains a page with links to various other social sustainability related websites.

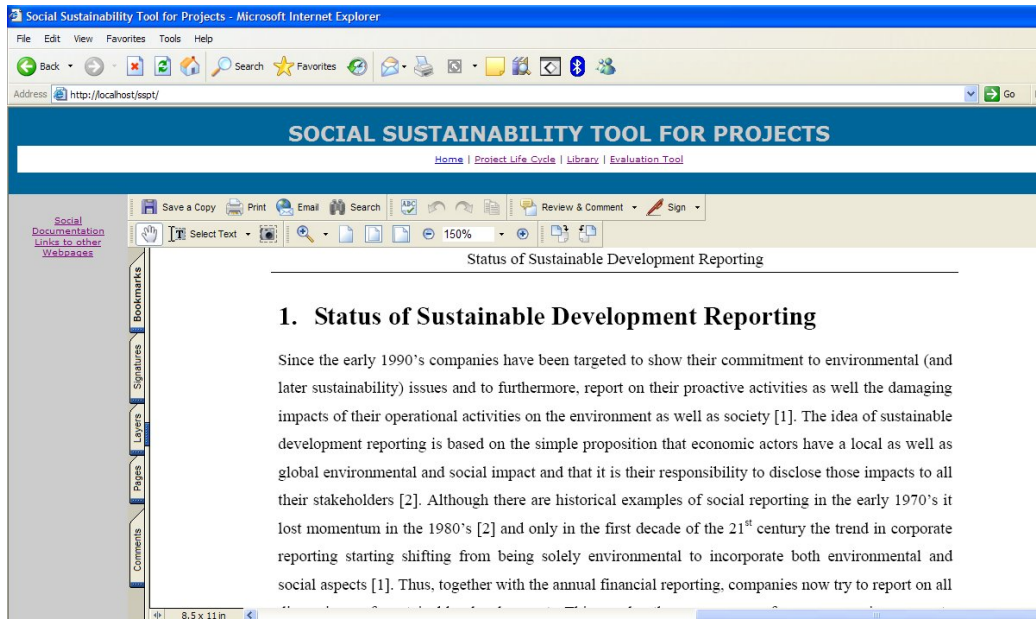


Figure 26-6: Example of a .pdf document in the library

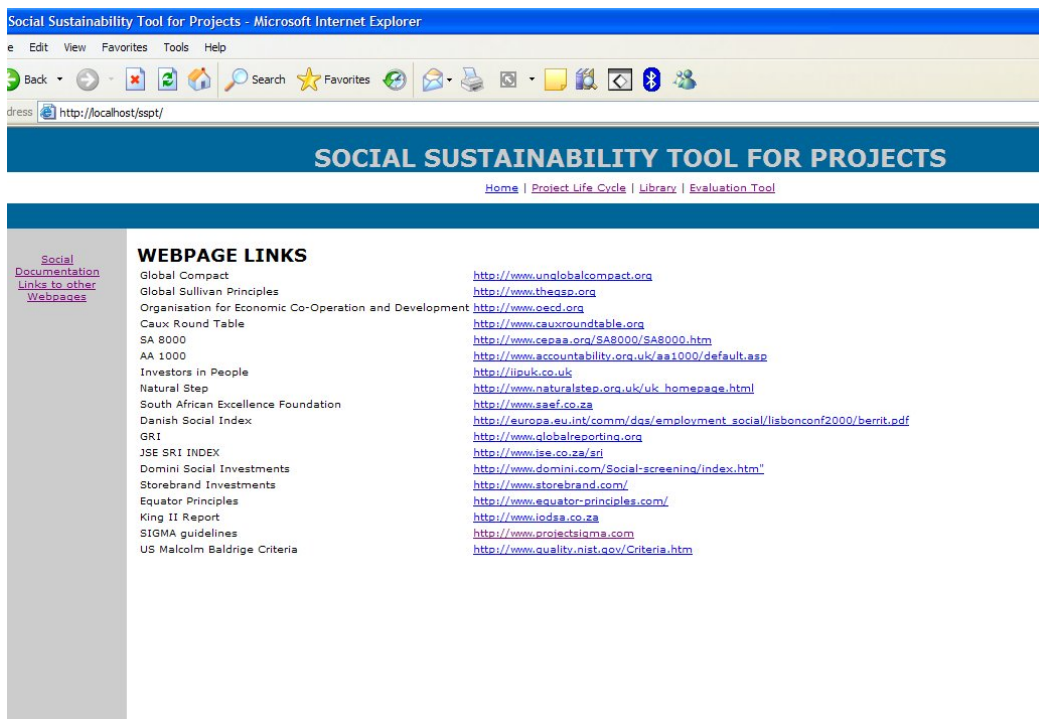


Figure 26-7: Library page with links to other websites

26.2.3 Evaluation Tool Section

The section consist of one page which indicate proposed gate questions that can guide decision-makers and contains a link to an Excel spreadsheet which can assist with calculation of Social Impact Indicators.

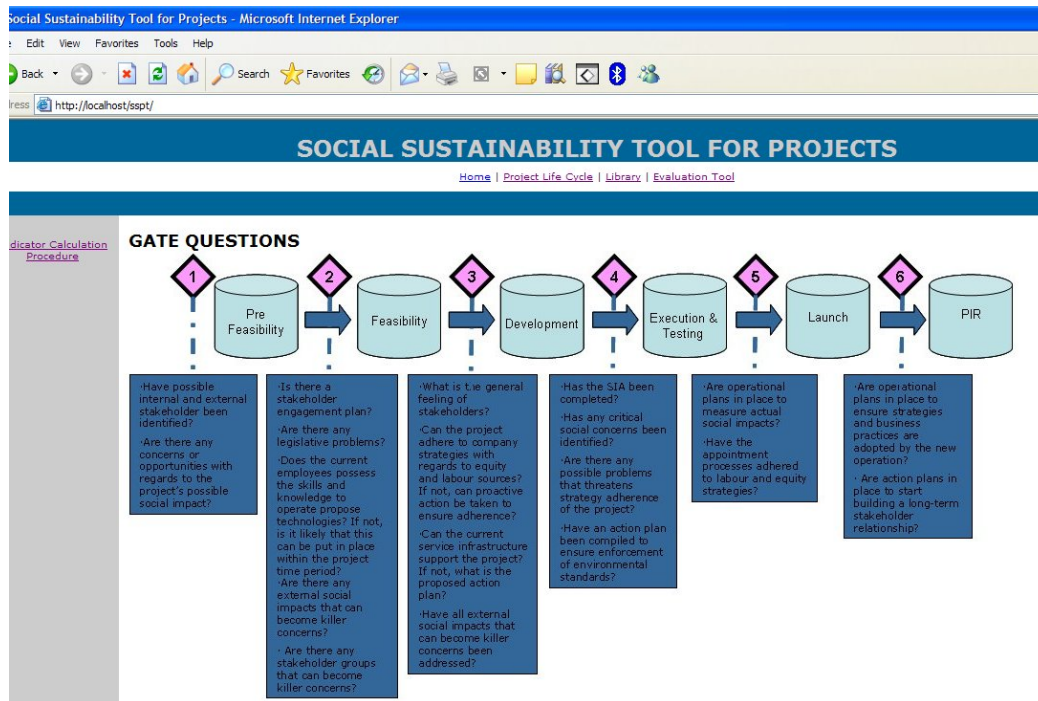
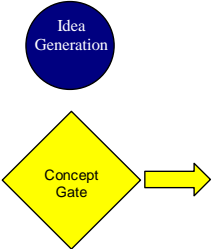
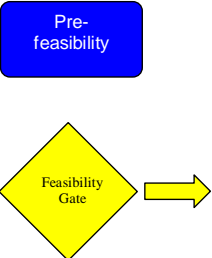
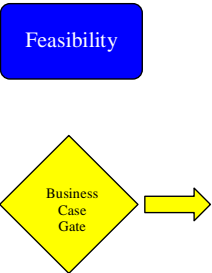


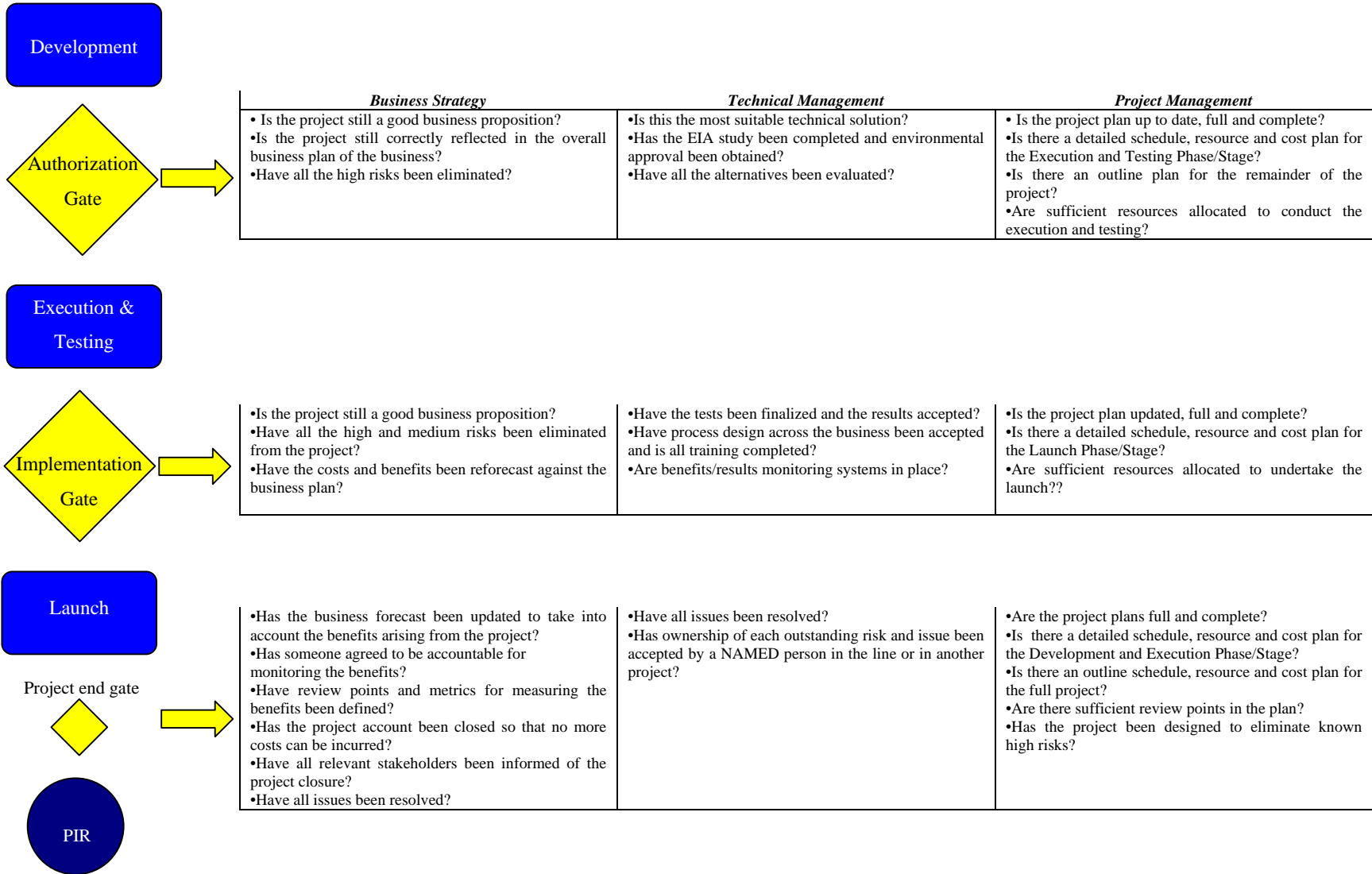
Figure 26-8: Evaluation Tool Section Home Page

27. Appendix S: Examples of Existing Gate Questions

	<i>Business Strategy</i>	<i>Technical Management</i>	<i>Project Management</i>
 <p>Idea Generation</p> <p>Concept Gate</p>	<ul style="list-style-type: none"> •Is it clear which business units or function the proposal support? •Does the proposal fit the strategy? •Is the opportunity attractive relative to alternative proposals? •Is the proposal likely to be acceptable to the customers and shareholders? •Do any competitors have capabilities similar to this? •Will the proposal provide the business with a competitive advantage? •Has a project sponsor been identified for at least the next phase/stage of the project? 	<ul style="list-style-type: none"> •Can resources be committed to do the pre-feasibility study? •Is the business likely to be able to develop or acquire the required capabilities to support the proposal? •Is the proposal technically feasible with current technology? •Has the organization operational capability to support the proposal? 	<ul style="list-style-type: none"> •Has a project manager been identified for the pre-feasibility phase/stage?
 <p>Pre-feasibility</p> <p>Feasibility Gate</p>	<ul style="list-style-type: none"> •Is it clear which business units or function the project support? •Does the project fit the strategy? •Is the business opportunity attractive? •Are the risks acceptable? •Is the initial business case and investment appraisal acceptable? •Have all the relevant business units and functions been involved in creating and reviewing the deliverables? •Has a project sponsor been identified for the project? 	<ul style="list-style-type: none"> •Can resources be committed to perform the feasibility study? •On current knowledge is it technically feasible with current technology, or is there a possible technical development path to provide the capability or service? •Does the business currently possess the operational capability to support the project? If not is it likely that this can be put in place within the current/proposed process architecture? 	<ul style="list-style-type: none"> •Has a project manager been identified for the project? •Is there a detailed schedule, resource and cost plan for the Feasibility Phase/Stage? •Is there an outline schedule, resource and cost plan for the full project?
 <p>Feasibility</p> <p>Business Case Gate</p>	<ul style="list-style-type: none"> •Is it clear which business units or function the project support? •Does the project still fit the strategy? •Have the development concepts e.g. marketing been researched and tested on target segments and the need reaffirmed? •Is the detailed business plan acceptable and compelling? •Have the key sensitivities and scenarios for the recommended option been checked and confirmed as acceptable? •Is the output definition clear? •Is the business case ready to be build into the overall business plan? 	<ul style="list-style-type: none"> •Is it technically feasible with current technology? •Does the organization have the operational capability to support the project? •Are there resources to undertake the Development and Execution phase/stage? •Have formal commitments been made by the relevant line managers? •Have all relevant environmental permits been obtained? 	<ul style="list-style-type: none"> •Are the project plans full and complete? •Is there a detailed schedule, resource and cost plan for the Development and Execution Phase/Stage? •Is there an outline schedule, resource and cost plan for the full project? •Are there sufficient review points in the plan? •Has the project been designed to eliminate known high risks?

Sustainable project life cycle management: Development of social criteria for decision-making

Appendix S



Post Implementation

Review

28. Appendix T: Questionnaire

1. SECTION A: GENERAL QUESTIONS:

Male Female

How many years of work experience do you have?

- 2– 5 years
- 5 – 10 years
- 10 – 15 years
- More than 15 years

What is the size of the company you work for?

- Less than 50 employees
- 51- 500 employees
- 501- 1000 employees
- 1001-10000 employees
- more than 10000 employees

Do you regularly work with or are you regularly involved with any of the following activities or business models:

- Project Management Methodology Models
- Environmental Impact Assessment Studies
- Corporate Social Responsibility Projects
- Project Management Functions

Have you been registered for a post graduate Project Management Module yet? Yes No

If yes, have you completed the module yet? Yes No

Please indicate your awareness on the following issues:

Does your company have a sustainable development strategy?

Yes No Don't know

If yes, how familiar are you with the strategy?

- Heard about it
- Scanned through it
- Read it thoroughly
- Know it in detail, are able to explain and defend it

Do you think Corporate Social Responsibility Projects contribute towards the overall sustainability of a company?

Yes No Don't know

Do you think social and environmental aspects and impacts of a project should be taken into consideration during project progress meetings?

Yes, environmental only Yes, social and environmental

Yes, social only No

2. Section B: Criteria Evaluation

Please rate the following criteria against each other. The scale is as follows:
 3: extremely more important
 2: strongly more important
 1: slightly more important
 0: equally important

Criteria A	A more important				B more important			Criteria B
	3	2	1	0	1	2	3	
Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Social
Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Economic
Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Social

3. Section C: Social Criteria: Assigning Values to Criteria

You have 100 points to attribute to each of the following sets of criteria, which describe the sustainability of a project, please indicate how you will distribute it. You do not have to allocate points to all criteria, only to those you feel are relevant.

SET A

Criteria	Number of Points Allocated
Social Sustainability	
Environmental Sustainability	
Economic Sustainability	

SET B

Criteria	Number of Points Allocated
Internal Human Resources – company impact on employees	
External Population – company impact on community (in close vicinity to the operations)	
Macro Social Performance – company impact on larger spatial scale thus on region or province or country	
Stakeholder Participation- company’s efforts to engage with stakeholders and consider their opinions.	

SET C

Criteria & Example of Indicator	Number of Points Allocated
Employment Opportunities e.g. Number of permanent jobs created/destroyed; Percentage of unskilled jobs created/destroyed	
Employment Compensation e.g. Annual wages as a percentage of turnover, additional benefits in comparison to industry norms	

SET D

Criteria & Example of Indicator	Number of Points Allocated
Disciplinary & Security Practices e.g. Qualitative assessment of disciplinary practices, number of security personnel on premises	
Employee Contracts e.g. employee opinion of contract; employee contract in comparison to industry norm, average of overtime worked, Percentage of	

employees covered by collective bargaining agreements	
Equity & Diversity e.g. ratio between male and female wages on various levels, percentage of women in organisation	
Labour Sources e.g. number of child labourers	

SET E

Criteria & Example of Indicator	Number of Points Allocated
Health & Safety Practices e.g. Percentage of the hours of training regarding health and safety relative to the total number of hours worked,.	
Health & Safety Incidents e.g. fatal accidents, man-hours lost, absentee rate.	

SET F

Criteria & Example of Indicator	Number of Points Allocated
Research & Development e.g. annual amount spend on R&D	
Career Development e.g. number of training hours per employee per year	

SET G

Criteria & Example of Indicator	Number of Points Allocated
Health e.g. patients per doctor ratio, occurrence rate of certain diseases	
Education e.g. adult literacy level, students per teacher ratio	

SET H

Criteria & Example of Indicator	Number of Points Allocated
Housing e.g. quality of houses, number of occupants per house	
Service Infrastructure e.g. average water consumption per capita, waste generated per capita	
Mobility Infrastructure e.g. ton kilometres per capita, public transport seats available per capita	
Regulatory and Public Services e.g. people per library ratio, existence of political parties	

SET I

Criteria & Example of Indicator	Number of Points Allocated
Sensory Stimuli e.g. percentage of community complaints about odour or noise or aesthetics	
Security e.g. crime rate, people per police officer ratio	
Cultural Properties e.g. number of cultural sites	
Economic Welfare e.g. unemployment rate of community, average income per household	
Social Pathologies e.g. percentage of alcoholics, percentage of people who are HIV positive	
Social Cohesion e.g. number of community clubs, number of community events	

SET J

Criteria & Example of Indicator	Number of Points Allocated
Economic Welfare e.g. company's contribution to regional GDP	
Trading Opportunities e.g. Company purchases in region, Indirect job creation	

SET K

Criteria & Example of Indicator	Number of Points Allocated
Monitoring e.g. annual amount spend on environmental monitoring, hours spend in regional environmental meetings	
Legislation e.g. man hours spend in legislative workshops	
Enforcement e.g. number of suppliers with ISO 14001, qualitative assessment of supplier selection codes	

SET L

Criteria & Example of Indicator	Number of Points Allocated
Information Provisioning e.g. number of press releases per year, number of times website has been updated	
Stakeholder Influence e.g. number of stakeholder meetings per year, existence of mechanisms to distribute stakeholders' opinions	

SET M

Criteria & Example of Indicator	Number of Points Allocated
Macro Socio-Economic Performance e.g. contribution to GDP	
Macro Socio-Environmental Performance e.g. annual amounts spend on interaction with environmental department of government	

SET N

Criteria & Example of Indicator	Number of Points Allocated
Human Capital e.g. change in life expectancy at birth	
Productive Capital e.g. average water consumption per capita, ton kilometres per capita, people per library ratio	
Community Capital e.g. community opinion on sense of place	

SET O

Criteria & Example of Indicator	Number of Points Allocated
Employment Stability e.g. change in number of jobs available or total annual amount spend on wages	
Employment Practices e.g. percentage of employees covered by collective bargaining, percentage of female workers	
Health & Safety e.g. annual amount spend on Health and Safety, number of fatal accidents	
Capacity Development e.g. does the company have a knowledge management policy, amounts spend on training	