

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).

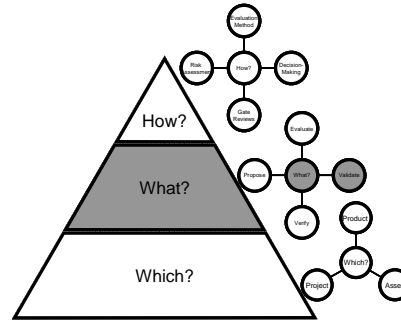


Table 5-1: Three levels of relevance and techniques used for validation on each level

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.

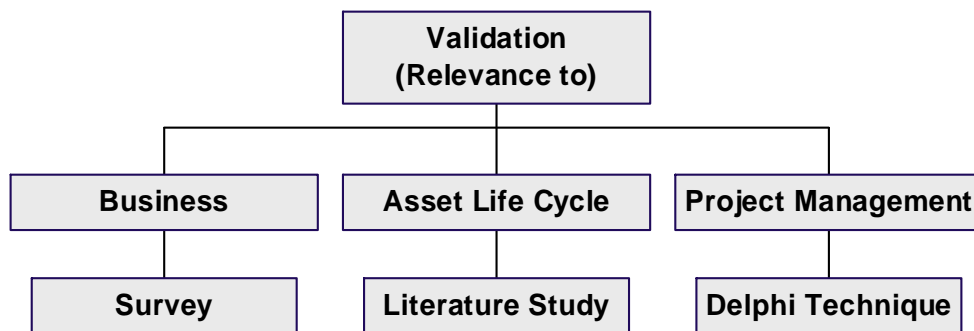
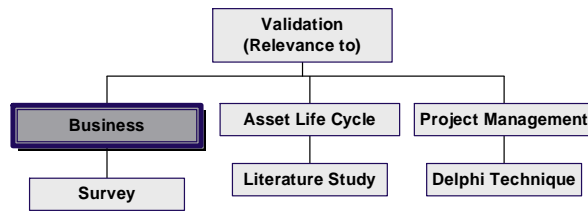


Figure 5-1: Validation Structure of the Proposed Social Sustainability Framework

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.

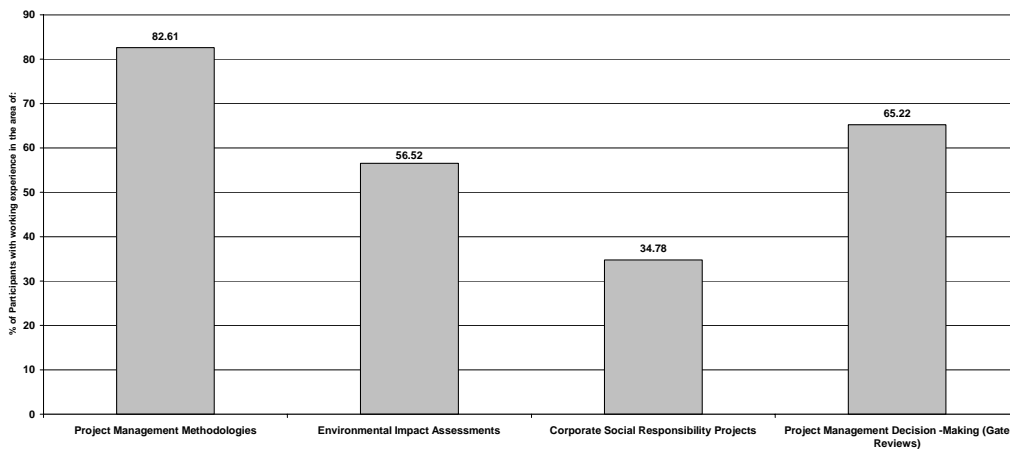


Figure 5-2: Related Expertise of the Participants of the Business Validation Survey

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.

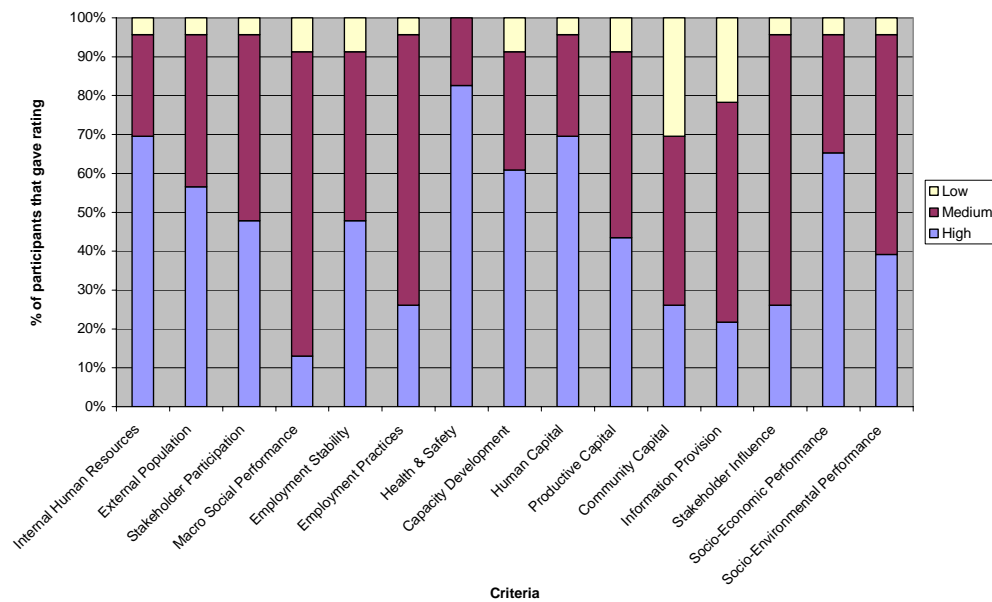


Figure 5-3: Results of the Survey regarding the Relevance of the Criteria

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.

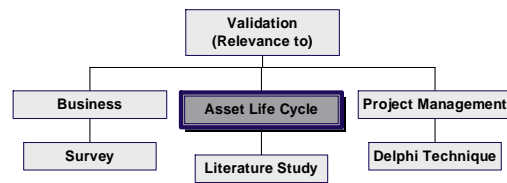
The results indicating whether the specific criterion is on the right level are summarised in Table 5-3.

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.

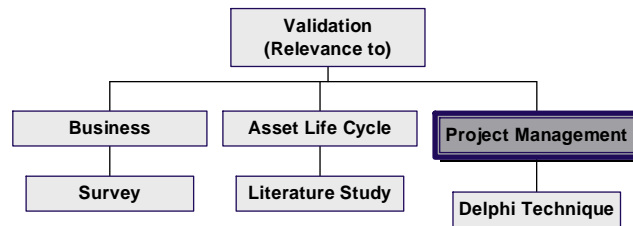
The business model used in section 1.2, which indicated that business have distinct levels on which change takes place namely, strategic, process and operational level, adds further weight to this outcome. It seems logical that social aspects should be addressed on all three levels. The analysis of both 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.

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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																
iv	Regulatory & Public Services/ Institutional Services	C,O,D			x		x	x			x	x	x		x	x
3 Community Capital C,O,D																
Sensory Stimuli D,C,O,D																
i	Security	C,O,D	x				x				x				x	x
ii	Security	C,O,D					x								x	x
iii	Cultural Properties	C,O,D				x	x							x	x	x
iv	Economic Welfare	C,O,D				x	x		x		x			x	x	x
v	Social Pathologies	C,O,D				x	x		x		x	x		x	x	x
vi	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	Trading Opportunities	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	Legislation	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	Selected 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	Stakeholder Empowerment	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	