A Manual of Social Impact Assessment of Mining Projects

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Le CI Australian Research Council Linkage Project: ‘Creating Empowered Communities: Gender and Sustainable Livelihoods in a Coal Mining Region in Eastern Kalimantan, Indonesia’
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Introduction

Social Impact Assessment (SIA) refers to the processes and procedures for understanding and managing social consequences of development-related actions. The initiators of these actions – businesses, government agencies, development organizations or Non-Governmental Organizations (NGOs) are often referred to as ‘actors’, a term used in these guidelines. The actors can employ this process to minimize and mitigate impacts that are likely to affect the community living in or around a planned project – in this case a new mining project or expansion of an existing project. SIA is particularly relevant for mining projects because to mining companies social issues present a difficult but important challenge. Whilst the understanding of the environmental impacts of mining projects has improved greatly, there has been far less attention in the business world on the social and cultural issues.

This guideline provides a direction towards a basic awareness of what the social impacts are, and gives an outline of how they can be dealt with, and the appropriateness of available options. However, in the overall decision-making scenario, other factors such as economic, environmental, biophysical, in addition to social factors would contribute to understanding and choosing the best possible option out of the available ones. Whilst this Guideline is prepared primarily for Kaltim Prima Coal, the Industry Partner in the Australian Research Council funded Linkage Project: ‘Creating Empowered Communities: Gender and Sustainable Livelihoods in a Coal Mining Region in Eastern Kalimantan, Indonesia’, it is also intended for the use of a wider audience of small and large mining companies operating in the Asia-Pacific region.
The purpose of an SIA is to accurately identify a range of possible impacts arising out of a proposed developmental action and determine which of these are the most likely should the proposal become a reality. SIA encompasses studies regarding the actions that need be taken to minimize the adverse impacts identified and maximize the impact of the favorable ones.

This note offers practical inputs and guidelines to the mining industry for undertaking and delivering satisfactory social impact assessments when finalizing mineral resource mining plans. The guide is organized as follows:

- **SIA overview**
  - History of SIA
  - Definition and aims of SIA
  - What are social impacts?
  - Why should a SIA be done?
  - What is the SIA process?
  - How to ensure the quality of the SIA process?

- **SIA in mining**
  - Social impacts of mining projects
  - Introduction to SIA Management (SIAM): A guidance note on conducting SIA in practice
  - Key principles of SIAM
  - SIAM methodology containing information on conducting a SIA, including the key stages in the process and notes on what to do in practice.
An Overview of SIA

This section gives a brief overview of SIA – definition, justification, history and aims.

History of SIA

Some forms of SIA were carried out as early as 1640 in The Netherlands by Johan de Witt and in 1775 in France, when the Marquis de Condorcet assessed the likely impacts of a proposed canal. Condorcet is widely credited with the concept that social action might be quantifiably analysed and reliably predicted. The roots of modern SIA can be traced partly to research started in 1950s by anthropologists and sociologists who wanted to fully consider the impacts or consequences of development processes and the possible negative side-effects it may carry. The field of SIA, as we now know it, emerged only during the 1970s, primarily as a response to new environmental legislation. In its origins and its contributions, SIA is a hybrid field of social science as well as policy sciences, the latter by virtue of it being a component of the policy-making process.

Definition and aims of SIA

SIA aims to be a systematic, iterative, ideally ex-ante assessment of the changes that would be brought about through development processes that have been thought to have ‘social impacts’. Definitions of SIA are manifest as shown in Box 1 but effectively they describe the same procedure but perhaps with different flavours or degrees of succinctness.

The objective of undertaking SIA is to ensure that local communities are not adversely impacted and that they can reap sustainable benefits from the mining projects. A much more wide-ranging view of the goal of social impact assessment:

‘is to bring about a more ecologically, socio-culturally and economically sustainable and equitable Environment. Impact assessment, therefore, promotes community development and empowerment, builds capacity, and develops social capital (social networks and trust)’.

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1 Freudenburg (1986, p. 451).
2 Provided by Vanclay (2003b, p.6).
BOX 1 SELECTED DEFINITIONS OF SIA

• The definition offered by the Inter-organizational Committee on Guidelines and Principles for Social Impact Assessment: ‘... efforts to assess or estimate, in advance, the social consequences that are likely to follow from specific policy actions (including programs, and the adoption of new policies), and specific government actions (including buildings, large projects, and leasing large tracts of land for resource exploitation) ...’ (Burge et al., 1995: 12).

• Describe and analyse the real or potential effects of proposed developments upon specific groups of people.

• The identification, analysis and evaluation of the social impacts resulting from a particular event. A social impact being a significant improvement or deterioration in people's well-being or a significant change in an aspect of community concern (Dietz, 1987: 54).

• The process of assessing or estimating in advance, the social consequences that are likely to follow from specific policy actions, project development, environmental impacts, commerce, altered tastes, media activity, social movements, etc.

• The systematic analysis in advance of the likely impacts a development or event will have on the everyday life of persons and communities.

• The process of identifying the future consequences of a current or proposed action which are related to individuals, organizations and social macro-systems.

• A method of policy analysis that offers great potential for integrating scientific policy analysis into a democratic political process (Dietz, 1987: 54).

• A process examining proposed projects, programmes and policies for their possible effects on individuals, groups and communities (Buchan and Rivers, 1990: 97).

• Prediction and evaluation of the social effects of a policy, programme or project while it is in the planning stage – before the effects have occurred (Wolf, 1980: 27).

• Analysis of past and present impingements upon social conditions and processes and a projection of likely future consequences of proposed interventions (Burge, 1994: 78).

• A systematic assessment of social and cultural impacts for a proposed development.

3 Following Barrow (2000, p. 4)
SIA can mean different things to different people. There are several ways in which SIA can be interpreted and applied. It is possible to trace a range at one end of which is the view of SIA as a policy tool, whilst at the other end is the view that SIA is a way to ensure community participation and community engagement in major projects. SIA can be used as an ad hoc research technique, or applied as a ‘technocratic’ planning or management tool, seeking to be ‘scientific’. It can be used as a policy instrument shaped by agreed laws and frameworks for application. However, this view does not do full justice to the spirit of SIA, as implied below:

‘Others see it (SIA) as a means of ensuring participation or even the empowerment of people in the development process.’

BOX 2 SELECTED AIMS OF SIA

• ‘The goal is to balance science and politics in policy formulation and implementation (Rickson et al., 1990: 9).
• SIA aims to help structure development so it responds to people's needs and is compatible with sociological conditions.
• The purpose of SIA is to answer the following question: 'Will there be a measurable difference in the quality of life in the community as a result of the proposed action?'
• The practical goal of SIA is to anticipate likely impacts and utilize the information in the planning process, and thereby ensure appropriate mitigation.’ (Barrow 2002, p. 3)

The purpose of this document is to provide the means of and indicate the ways in which the latter objective can be fulfilled.

A crucial role that SIA plays is in shaping ongoing monitoring and evaluation and improving the accountability of planners and administrators, often sponsored by businesses. Despite its wide variety of uses, there is an increasing consensus on previously conflicting positions such as the need to draw on interdisciplinary concepts and to develop original data where ‘available’ data are not sufficient.

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4 Barrow (2000, p. 2)
5 Barrow (2000, p. 4)
6 Freudenburg (1986)
What are the social impacts?
Social impacts are different, and need to be understood as such, from other impacts, such as environmental and economic. For example, a change in the forest cover is environmental impact, a change in the household income is economic impact, but a change in the family cohesion or daily rhythm of life is social impact. All these three impacts are indeed inter-connected in complex ways.

The entry and continued presence of a large-scale mining project, as with any other infrastructural development, can bring profound changes to the local social fabric. These changes are most profound in previously isolated or remote villages that have had little or no contact with the outside world. However, even well-established settlements feel the effects of major social change as their demographics alter rapidly. Some of the changes can have far-reaching and negative effects, although increased standards of living, better access to health care, sanitation or education may be beneficial to the community.

Of all social impacts, physical displacement is the most serious, and has many visible effects on the community and family life. However, the disruption of the social structure and production system – moving from subsistence living to 21st century life within one generation – may also involve serious cultural shock that breaks down community and family structures, and results in a loss of identity. Breakdown of traditional authority may lead to cultural conflicts and the collapse of community values and cooperation, consensus and sharing. New values based on the new economy may be more competitive and focus on individualism that might undermine the ability of the weaker to survive within the community. When communities are forced to relocate to another spot, with or without cash compensation, the impacts on the society are most obvious. Moving to another location might cause bitterness and hostility amongst the host community and clashes might seriously disrupt lives. Communities lose the subsistence resources they were used to before, and the new location may not offer all the water, trees, farmland, sanitation or game that were available to them before.

A major impact of a mining project on the society of an area is land alienation. For many indigenous or poor communities, the connection with land is much more than just dependence on a resource for a livelihood; it is also a strong bond, a tie that has been developed over generations. Often the land rights of indigenous communities have not
been recognized by law, and are thus in the domain of ‘customary’ rights. For example, although the land owned by the adivasis in India is legally non-transferable, meaning that it cannot be sold to another person, in many instances only a small part of the land they traditionally use is legally owned by them. Again, even where the community owns the legal title to the land, such as in case of the indigenous people in some parts of Australia, the situation is complicated by the fact that in most countries governments retain the rights to sub-surface mineral resources.

One of the fundamental changes that affect local people is the sudden influx of people into the area. These people are also the carriers of new ideas, values and activities to the area. In a densely populated country like India, mining areas may turn into haphazardly grown urban settlements with little or no provision of basic services such as water supply or sanitation. In a remote location such as Kalimantan, the presence of a mine would affect resource availability for the original local populations, whilst a rapid influx of people from other parts of the country takes place in search of new economic opportunities as well as better services than what is available elsewhere.

Increased migration and mining activity, as well as the environmental effects of mining particularly on water and air, may lead to serious health impacts. Environmental damage by a large mining project, if unaddressed, can affect the well-being of a community. For example, excessive erosion and sedimentation may lead to changes in river regimes and affect local crops. Pollution and water contamination may give rise to illnesses that were previously unheard of. The ability to resist some of these ailments might get lowered. Some groups might be more vulnerable to some diseases than others.

Demographic changes and the introduction of a cash-based economy in areas of new mining projects can raise local prices and lead to the dependence on purchased goods. Communities who once depended on locally produced goods or subsisted on local resources may increasingly become dependent on food that is brought from outside and that needs to be purchased by cash. The presence of mine employees can have a serious impact on raising prices, causing inflations.

The Box below gives a reasonably comprehensive list of the different types of impacts following Vanclay. The relative importance of a specific social impact arising from a
large scale and modern extractive industry will vary according to the local culture and religion.

Clearly, there are many variables that could be used to measure social impacts across mining projects, contexts and communities: population impacts, community/institutional arrangements, communities in transition, individual and family level impacts and community infrastructure needs. Any effective SIA process should deal with this range of impacts and prioritise them according to the local situation.

**Impacts on women**

Whilst the entire community bears the brunt of negative social impacts of mining, women often bear a disproportionately greater amount of the costs of major social
change. This is because in almost all societies gender roles for women and men are different: in most cases women are primarily responsible for the welfare of the children, and are dependent on community and family support networks to perform this role. Women are more susceptible to the negative impacts of mining because of the specific, masculine, nature of mining as a human project; big machines, rough and tough jobs in unusual workplaces, and a long history of masculinity associated with mining often introduces new social and moral norms of behaviour for women, restricting them from certain places and limiting them to others.

As old social structures break down with the introduction of a new mining project, and new and cash-based ones form, women are thrown into the most vulnerable situations. As the new cash-economy takes over, women’s dependence on subsistence resources grow, but these very resources gradually vanish. In this way, women’s value as productive community members – as ‘economically productive’ individuals – decreases significantly. Women’s workload can increase as a result. In some rehabilitation colonies women have not much to do and feel alienated. Women’s vulnerability arises primarily from their lack of land ownership and patrilocal marriages in many societies. Although women till the land, and produce crops, they neither own these lands nor are seen as farmers. Consequently, they are not the recipients of cash or jobs in compensation, and not expected to participate in community decision-making processes. Their vulnerability also results from the increased conflicts and strife within the community. Access to resources such as clean and safe drinking water, and sanitation facilities may affect women more seriously than men. Health impacts for women may be different than men. The introduction of cash and alcohol increases the incidence of domestic and other forms of violence against women.
Why should a SIA be done?
SIAs can immensely help both the community and the businesses to foresee and hence to avoid social risks associated with the project. The negative social impacts, if reliably predicted, could provide for opportunities for mitigation or avoidance through changes to the plan or alternative development plans. If we follow that the goal of SIA is that 'it seeks to help individuals, groups, organizations and communities understand possible social, cultural, or economic impacts of change, or better-still impacts of proposed change' (Barrow 2000, p.3).

Furthermore such assessments also provide an understanding of how to maximize the benefits of a proposed plan of action. Above all, undertaken in a participatory manner, SIAs can be valuable tools for community engagement and consultation, especially if community participation in the assessment process can effectively lead to the shaping (or re-shaping) of community development projects.
What is the SIA process?
As with an EIA, there are commonly followed steps or stages for the SIA process. While these steps or stages are not followed sequentially in practice, the process can be summarized into three stages namely impact identification, impact assessment, and impact management:

1. Impact identification

Scoping—Set terms of reference, limits of study, etc.

Formulation of alternatives—Identify what paths the development might take other than that proposed.

Profiling—Determination of what is likely to be impacted. Describe the social units affected. Identify indicators to measure. Establish the current social condition. In most cases, the problem to be mitigated or eliminated and the social system hosting the

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7 Barrow (2002, p 192-93)
problem will have a history. A critical account of this history is called the base-line analysis.

**Projection**—Make projections of what is likely to happen and who is affected a) if the proposed development proceeds; b) if it is abandoned; c) if alternatives are adopted. Identify indicators to study; identify cause effect linkages and feedbacks.

### 2. Impact assessment

Assessment—Determine the magnitude of impacts, what effect likely changes will have, what impacts are most significant and how people will react. Determine potential for avoidance or mitigation.


### 3. Impact management

Mitigation—if needed, identify measures to counter unwanted impacts.

Ongoing monitoring—Measurement of actual impacts, which can be compared with, predicted. The lessons that have been learnt can be fed-back into policy-making and planning at this stage. This is also the stage to develop plan for ongoing monitoring to warn of the need for further actions in future\(^8\).

**How to ensure the quality of social assessments?**

While there is no universal methodology for conducting SIA, a good SIA is likely to include the following features\(^9\):

- Identifies interested parties and affected peoples (IAPs or stakeholders)
- Facilitates and co-ordinates the participation of IAPs
- Documents and analyses the local historical setting in which the project will occur
- Provides a rich picture of the local cultural context and an understanding of local community values
- Identifies and describes the activities which are likely to cause impacts (scoping)

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\(^8\) Barrow (2002, p 192-93)

\(^9\) Vanclay ((2000b, pp.126-127)
• Predicts likely impacts, including cumulative impacts, and how the community might respond
• Assists in the selection and evaluation of program alternatives (including a no development option)
• Assists in site selection
• Recommends mitigation measures
• Provides suggestions relating to compensation
• Describes potential conflicts between stakeholders and advises on conflict resolution processes
• Develops strategies in the community for dealing with residual or non-mitigatable impacts
• Contributes to skill development and capacity building in the community
• Advises on appropriate institutional and co-ordination arrangements for all parties
• Assists in the devising and implementation of monitoring and management programs
• Collects data for profiling to allow evaluation and audit of the impact assessment process and the project itself.
Social impacts of mining projects

A typical mining project cycle can be conceptualized as exploration, pre-feasibility, construction, operation and closure. As is the case with any major infrastructure development, medium and large-scale mining projects affect local societies in many ways leading to social changes. The effects of these social changes are readily obvious and intensely experienced by those regions which have been hitherto maintained little or no contact with the outside world. The social changes are typically a mix of adverse and favorable ones. The potential adverse social impacts of mineral development are commonly categorized as social displacement, physical displacement, loss of land tenure, relocation, demographic changes and potential negative health and economic impacts of demographic changes. Examples of favorable social changes include, an increased standard of living, better access to health care, education and sanitation that can greatly benefit local communities, as long as these services are provided efficiently and do not usurp the role of government or allow governments to escape their responsibilities.

The actual impacts experienced will depend on a multitude of factors. Joyce (2001) lists some of the most important ones:

- the pre-existing situation (baseline conditions),
- the process of community engagement and capacity-building,
- the design of the development process and mine,
the policies and of governments, and
- the other processes of social change exhibiting a trend, or those that develop as a result of the mining project

### SIA in the Mine Cycle

The specific steps in mining operations vary, depending on the size and shape of the mineral reserve, the specific ore being mined, the extraction method and the scale of the operation. Nevertheless all mining operations follow roughly the same course, consisting of two inter-linked cycles: the mine cycle and the mineral production cycle.

The mine cycle begins with exploration, project development and consultation, mine operation and ore extraction, closure and reclamation. SIA should begin when exploration is complete and feasibility studies and project development begins. SIA continues throughout the project cycle, and is of great importance before a closure plan is drawn out.

Right from the start of the mining project cycle, mining companies must be sensitive to the impacts of their actions on local communities and adapt their community social investments tailored to the social programs and community relations strategies needed for each local community. If the SIA study is being conducted in-house then it should be mandatory that the study be undertaken by a person with sociological or other relevant skills training. For some activities it might be important to enlist the support of an academic institution or a consultant and even NGOs in the field of conservation who may have good local knowledge.

### SIA Management (SIAM): Conducting SIA in practice

As mentioned in the previous section, significant mining operations impact local societies in profound ways in their social and economic impacts. In view of this, improving the management of these impacts is high up on the policy agenda of many governments as an important goal of sustainable development. Also, for companies in the extractive mining business it is a part of the corporate social responsibility agenda with the triple bottom line of generating profits for shareholders, caring for and conserving the environment and contributing positively towards the communities.
To that end, this paper introduces SIA Management (SIAM), a guidance note on conducting SIA in practice. SIAM is designed to assist mining companies to identify and manage the positive and negative social impacts of their operations on the communities affected by these impacts. This guide seeks to meet the growing expectations of improved social performance and sustainable development by extractive industries, as envisaged in the Global Mining Initiative, the 2002 World Summit on Sustainable Development.

**Key Principles of SIAM**

SIAM has 4 key principles that drive the entire assessment process to ensure a good quality outcome and also has a set of tools to assist in operationalization of those principles. The key principles of SIAM are derived from World Bank’s Social Analysis Sourcebook (2002) that indicates some useful criteria for ensuring an acceptable quality of social assessment. The associated tools ensuring compliance with the key SIAM principles are applied at various stages in the assessment process as will be explained later.

- **Social/Cultural diversity and gender analysis**: Dealing with social impacts requires an understanding of the complexity of the social structure of the communities that are being impacted. A greater understanding of what constitutes the parts of the whole rather than trying to treat the entire community as a homogeneous entity is likely to result in more successful initiatives and mitigation strategies.

- **Stakeholder analysis**: A satisfactory stakeholders’ analysis will identify and describe the characteristics of those people and groups who affect or are affected by the project, and who thus have an interest and some degree of influence over the project’s outcome.

- **Institutional analysis**: In addition to the social structure and stakeholders components, there needs to be detailed assessment of the formal and informal institutions, rules, organizations and their behaviour likely to affect the mining project and the changes that are likely as a result of the project. This analysis should describe the inter-linkages between stakeholders and these institutions to help identify institutional constraints to success.
Participation: The social diversity and gender analysis and the stakeholder analysis jointly will assist in the identification of a good participatory framework. This framework will aim to bring into the social assessment process previously excluded groups affected by the project as well as beneficiaries of the project. Appropriate mechanisms to initiate and sustain the required participation need to be deployed for a good quality social assessment process.

SIAM Methodology: Key components of SIAM

Stage 1: Impact identification
Step 1: Analyzing the actors and targets
Since social impact assessment deals with the consequences of a current or future action, it is important that the actors who are initiating the action as the impactors be outlines. Similarly, the ‘target’ or the social system that is going to be impacted needs to be analyzed. Usually, these analyses should include a mapping of their boundaries through identification of the key stakeholders within each group, their sub-systems and related phenomena outside the system's boundaries.

Activity 1: Analyzing the actor system— In the first step of the analysis, the proposed action or the project should be outlined. In case of a proposed mining operation or an expansion of the existing operation of the mining company, this would clearly identify the physical area, infrastructural construction and/or buildings, and start dates etc. In addition to readily available information such as mining methods, estimated project schedule and operational details, other information need to be collected about the company’s immediate operation in terms of number of employees, output per product, estimate of employee and contractor salaries, mix of the employees from the local region as well as from outside function wise, budgets for community social investment and environment protection. Knowledge concerning the company’s projections about the operation for the future is also required. Other information such as supplies from local community that highlights the connections between the actor system and the target system needs to be collected.

Activity 2: Analyzing the social system— This step would involve mapping the key stakeholders within the society from the viewpoint of the operation of the mining company. The important tool of ‘Stakeholder Analysis’ can be used for this purpose.
Stakeholder Analysis identifies people, groups, and organizations who are impacted by the proposed project directly or indirectly, as well as those who can potentially affect the proposed project through their interest in the company’s operations. Both groups are likely to influence the outcomes of the impacts of the mining operations. At this stage, it is important to identify and disaggregate the stakeholders in the first category—those who are the beneficiaries and those who bear most of the adverse impacts.

Subsequently, during the next stage of the SIA process, the beneficiaries and sufferers can be further disaggregated by characteristics at household level, occupation as well as on a cultural and gender basis.

For the Stakeholders in the second category such as civil society organizations, trade unions, business associations, it is important to understand who are favorably disposed to the proposed action as well as who are likely to oppose the proposed action. An understanding of these influencers can determine the nature of the impacts as well as the success of the proposed action or the mining project. At this stage, it’s crucial to do a first-cut Stakeholder Analysis based on the understanding of the target system available. This step can be repeated in greater detail and assumptions verified during a later stage that involves consultation.

Table 1: Stakeholder Analysis

<table>
<thead>
<tr>
<th>Questions to ask ourselves regarding stakeholders</th>
<th>Stakeholders (impact/interest)</th>
<th>Stakeholders (impact/interest)</th>
<th>Stakeholders (impact/interest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Who will be negatively affected by the mining project?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who will benefit from such initiatives or projects?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who will be responsible for implementing measures to mitigate any negative impacts?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whose cooperation, expertise or influence would be helpful to the success of the project?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who are the most vulnerable, least visible and most voiceless, for whom special consultation efforts may have to be made</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who supports or opposes the changes that the initiatives or projects will bring?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who might have resources to contribute?</td>
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<td></td>
</tr>
</tbody>
</table>
A good Stakeholder Analysis typically involves:
- identifying the key primary and the secondary stakeholders;
- defining their characteristics;
- identifying the interests of stakeholders in relation to the developmental activity i.e. the mining project;
- identifying possible conflicts of interests amongst the stakeholders with a view to help manage potential sources of conflicts during the course of the mining project
- identifying relations between stakeholders that may serve to advance the developmental activity
- understanding the barriers to and the requirements for the stakeholders’ effective participation in the mining project;
- assessing the capacity of the stakeholder groups to participate in the development activities; and

In addition to assessing the capacity of the stakeholder groups to participate in the mining project, an assessment of the appropriate level of engagement with the stakeholders needs to be done as well. The engagement may encompass a range of activities, including providing information, consultation, participatory planning or decision-making and partnership in the mining project. The level of interest identified by asking the right questions of each stakeholder helps decide the time commitments with respect to each stakeholder group. Depending on this, the stakeholders may be involved in the different stages of the project with differing levels of engagement ranging from merely providing info to participatory planning or partnerships. The following Stakeholder Participation Matrix must be the outcome of the Stakeholder Analysis. This information will guide a key principle of SIAM, namely that of participation.

Furthermore through Institutional analysis, the key actors & their behavior, institutions & their rules with in the target system should be identified to better appreciate the success of the proposed action as well as the nature of the impacts it is likely to create.
Table 2: Stakeholder Participation Matrix

<table>
<thead>
<tr>
<th>Project stage/ Level of participation</th>
<th>Control</th>
<th>Partnership</th>
<th>Consult</th>
<th>Inform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 2: Profiling— It is possible that the stakeholder analysis does not identify all stakeholders. For this purpose, as well as to establish a base-line or current social condition, a social profile will be useful to map the community as well as its strengths and weaknesses. This mapping should also disaggregate information by gender, economic classes and social groups in line with the social and gender diversity principle of SIAM. In most cases, the target social system will have a history. A critical account of this history through a base-line analysis is also useful in creating a comprehensive social profile. The profiling should describe the social units affected and identify indicators to measure. A good indicator must be precise, measurable, socially relevant,
have a clear link to the potential impact being assessed and should be obtainable readily.

A sample of the indicators across important categories is shown herewith.

### Table 3: Sample indicators for profiling

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Employment</th>
<th>Agricultural family financial characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Occupations</td>
<td>Agricultural family income</td>
</tr>
<tr>
<td>Distribution</td>
<td>Employment gender wise</td>
<td>Non agricultural income</td>
</tr>
<tr>
<td>Projections</td>
<td>Employment age wise</td>
<td>Value of land</td>
</tr>
<tr>
<td>Age wise distribution</td>
<td>Employment</td>
<td>Rate of Return</td>
</tr>
<tr>
<td>Population density</td>
<td>Industry wise</td>
<td>Debt servicing ratio</td>
</tr>
<tr>
<td>Population structure</td>
<td>Unemployment rate</td>
<td></td>
</tr>
<tr>
<td>Net migration</td>
<td>Economic dependency</td>
<td></td>
</tr>
<tr>
<td>New Arrivals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertility rate</td>
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<tr>
<td>Life expectancy</td>
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<tr>
<th>Housing</th>
<th>Education</th>
<th>Economic dependency</th>
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<tr>
<td>Dwelling structure classification</td>
<td>Education institutions</td>
<td>Agricultural Sector</td>
</tr>
<tr>
<td>Housing tenure</td>
<td>Highest qualification obtained</td>
<td>Mining sector</td>
</tr>
<tr>
<td>Self owned dwellings</td>
<td>Qualification – area of study</td>
<td>Manufacturing sector</td>
</tr>
<tr>
<td>Rented dwellings</td>
<td>Participation in recent training</td>
<td>Service sector</td>
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<table>
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<th>Households</th>
<th>Income</th>
<th>Linkages</th>
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<tr>
<td>Household size</td>
<td>Individual Income</td>
<td>% of regional income dependent on exports</td>
</tr>
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<td>Families without children</td>
<td>Household income</td>
<td>Trends in world prices for commodities produced</td>
</tr>
<tr>
<td>Single parent households</td>
<td>Household income occupation wise</td>
<td>Terms of Trade</td>
</tr>
<tr>
<td>Single person households</td>
<td>Overview of incomes in predominant industry, trends and social conditions thereof</td>
<td></td>
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<tr>
<td>Group households</td>
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</tbody>
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<table>
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<tr>
<th>Cultural diversity</th>
<th>Social Infrastructure</th>
<th>Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of Birth</td>
<td>Major centres of region,</td>
<td>Indigenous population</td>
</tr>
<tr>
<td>Language spoken at home</td>
<td>Access to Health services</td>
<td>Indigenous age profile</td>
</tr>
<tr>
<td></td>
<td>Access to Community services:</td>
<td>Life expectancy</td>
</tr>
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<td></td>
<td>Local government support</td>
<td>Criminal justice rates</td>
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<td>State/Federal govt. agency presence and investment</td>
<td>Education and employment data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community specific</td>
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</table>
Making sense of the profiling in practice

In addition to describing the current social and economic conditions, a good profile will should also include the trends thereof that will highlight the social and economic processes underway in the region. Armed with this kind of a profile, appropriate strategies aimed at improving the outcomes from the mining project as well as for mitigating the negative impacts on the community can be planned.

The profile tells us about the community’s potential to absorb the opportunities arising out of the proposed action. For instance, if the profile identifies relatively high education levels then this might give an insight into the possibility of local employment for the proposed action through the mining project. As another example, if the profile reveals economic hardship due to result of poor education, unemployment, low income, low productivity then it probably suggests that the necessity of location-specific

Source: Adapted from Queensland Department of Natural Resources, Mines and Energy ‘Compiling regional social and economic profiles: a practical guide for regional NRM bodies in Queensland’
community social investments in education, skills training etc to enable the region’s potential to opportunities from the mining project.

Based on the economic dependency on the type of occupations, the profile is also likely to give insights into how the community is likely to be affected in case of economic changes. For example, the profile may reveal the sectors that are susceptible to impacts from the mining project. In that case mitigation measures must be put in place to minimize the adverse economic and subsequent social impact. Other indicators might suggest reasons that might hinder participation. Appropriate measures such as transport, childcare facilities may then be initiated to encourage participation.

The above are examples of how the profile might be used to inform decision making for the subsequent stages of the SIA process.

**Step 3: Preliminary projections** — This activity is to determine what is likely to be impacted as a result of the action of the actor system on the target system. In consultation with the various stakeholders, the potential adverse as well as favorable issues and impacts need to be identified. This initial assessment serves as a first step towards participation of all the key stakeholders and should be used only as a means to achieve better understanding of the issues as well as of the associated stakeholders that need to be dealt with carefully in later stages of the assessment to manage the social impacts of the proposed action. As mentioned previously, the Stakeholder Analysis may be done in greater detail at this stage to get a better understanding of the issues and likely sources of conflict from the viewpoint of the stakeholder. At this stage, the level of impact need not be determined.

Strategic techniques need to be used to target the various community sectors depending on the purpose and efficiency of the participation process. For example, Personal interviews may be used as a part of the consultation process when there are likely issues that are specific to each stakeholder and/or that the stakeholders would need confidentiality. Similarly, Workshops may be used to involve stakeholders in brainstorming for possible issues as well as their proposed solutions that are likely to emerge as a result of the proposed action.
Step 4: Reexamine profiling— Based on the discussions with various stakeholders and initial projections, we must check whether there is a need to capture more information for an improved and useful social profile.

Step 5: Projection— At this key stage of a SIA exercise, projections of the range of impacts and who is affected needs to be made under various scenarios: if the proposed development proceeds; if it is abandoned; if alternatives are adopted. In the case of the scenario wherein the proposed development proceeds, the projections broken down at activity level (such as transportation of goods, tailings dam, use of smelter and crusher and so forth) of the project operations should be able to identify the social impact as a result of that activity of the project operations. The mechanisms of the activity that cause the change and the associated impacts need to be clearly established. Furthermore the stakeholders that are likely to be impacted by that particular activity of the project operations need also be identified. At this stage, not only the independent personnel undertaking the SIA exercise, but the previous and new consultations with the various stakeholders provide inputs to tracing the possible social changes, the specific impacts as well as their likely solutions provide key inputs for preliminary projections. Also the key indicators with respect to the possible impacts to study must also be identified. This should be accompanied by an identification of ‘cause and effect’ linkages and feedbacks of the impacts and the indicators. Some of the potential social impacts of a mining project as identified earlier are that of demographic changes, breakdown of family ties, changes in livelihood patterns, changes in health, water supply and sanitation availability and access, greater incidence of crime and poor law and order, capacity and quality of infrastructure and services, and finally physical safety from pollution and other mine-related environmental issues.

An example of understanding the impact of demographic change would be by studying indicators of specific impacts such as migration, kinship ties and community relationships. The specific impacts in turn have a number of potential impacts and the indicators to study should clearly establish this cause and effect linkage. For example, a study of the impact of demographic change through a specific impact of migration occurs as a result of movement of people from regions of low employment opportunities due to the perception of the mining project operations as a source of potential employment. This in-migration will in turn have potential impacts such as increased pressure on infrastructure, services and natural resources among other impacts. An
indicator in this case to study could be per capita availability of infrastructure, services and natural resources.

This stage can be concluded by summarizing a list of all the identified changes as a result of the project operations and their associated social impacts. Furthermore an important output of this stage would be an understanding of the social impacts in the context of their effect on the project operations itself.

**Stage 2: Impact assessment**

*Step 6: Assessment*—After identifying the various impacts, the magnitude of impacts need to ascertained as well as the understanding the effect of the changes, its significance and the likely reaction of people affected by it. The assessment should also determine the potential for mitigation or if possible avoidance.

The summary of changes and the associated social impacts which is the output from the previous stage will be used to assess the significance of those issues to those stakeholder affected by it. The significance of the impacts may be considered by looking at various criteria such as its magnitude, duration, the number of people it affects and also how it affects the community/regional aspirations and plans. An understanding of the significance of the impacts needs to be done in consultation with the community as they are the affected parties and it is their perception regarding the impacts that needs to be managed. To do this, there should be an understanding whether the impact is positive or negative for each stakeholder, the perceived degree of impact (including an identification of the direction of the impact in the future; whether it is likely to increase or decrease) as well as the duration of the impact.

To identify and demonstrate these impacts, an assessment technique appropriate to the length and intensity of the SIA needs to be chosen. A useful technique is the one that uses social indicators. Herein building on the profiling of various social indicators in a previous stage, the changes can be monitored over a period of time.

*Step 7: Evaluation*—An analysis of the net benefits in view of the social impacts must be done to understand the beneficiaries as well as the losers of the mining project. The evaluation must take into account the mitigation measures planned through the management action to reduce the social impacts as well as other community social investments that is likely to improve key social indicators. In case the proposed
management action is not acceptable even after accounting for the mitigation measures, alternative course of action may be pursued. Of course alternative course of action would warrant parts of this SIA exercise to be repeated depending on the proposed course of action.

A complete evaluation would be when the impacts, net benefits, potential mitigation measures as well as the alternatives have been taken into account. Based on this appropriate actions should be recommended as far as the proposed management action is concerned.

**Stage 3: Impact management**

*Step 8: Mitigation*— Depending on the outcome of the evaluation stage, the mitigation measures must be finalized along with an action plan to achieve those measures. The International Council for Minerals and Metals (ICMM) discusses a hierarchy of mitigation measures, from most desirable to least desirable, used to reduce biodiversity impacts. A similar set of actions may be used for mitigation measures for social impacts. It is worth looking at ICMM’s mitigation measures for biodiversity impacts since they are likely to have an effect on the social condition of local communities since many of these communities’ lifestyles are closely intertwined with their biophysical environment. It clearly notes:

- **Avoiding impacts by modifying a proposed mine or existing operation in order to prevent or limit a possible impact. The highest priority should always be afforded to avoidance measures.** Changing the location or design of a processing plant is a simple example. A more extreme example of avoidance is not to proceed with the development. For example, if an economically attractive mineral deposit were offered to an ICMM member within a World Heritage Site, ICMM’s policy on ‘no go’ areas would dictate that the project could not proceed.

- **Minimize impacts by implementing decisions or activities that are designed to reduce the undesirable impacts of a proposed activity on biodiversity.** An example would be installing tertiary treatment to remove phosphates from effluents that could lead to
eutrophication of wetlands and changes in species composition, with resultant impacts on aquatic biodiversity.

Rectify impacts by rehabilitating or restoring the affected environment. This would include attempts at habitat re-creation, to restore the original pre-mining land uses and biodiversity values.

Compensate for the impact by replacing or providing substitute resources or environments. Compensatory measures should be used as a last resort and might include so-called offsets, such as purchasing an area of equivalent habitat for longer-term protection\(^\text{10}\).

**Step 9: Ongoing monitoring**— This final stage involves an ongoing and continuous monitoring process by measuring actual impacts that can be compared with the predicted impacts. Lessons learnt can be used as a feedback into policy-making and planning.

The SIA needs to be output as a transparent and publicly, readily available document which details the stakeholders, institutional and community groups that have been consulted.

\(^\text{10}\). see ICMM (2006, p. 92)
References


ICMM, see International Council on Mining and Materials


Queensland Department of Natural Resources, Mines and Energy 2004, ‘Compiling regional social and economic profiles: a practical guide for regional NRM bodies in Queensland’, Australia


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