EIA REVIEW METHODOLOGY

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INTRODUCTION

Socio-Environmental Impact Assessment have become increasingly strategic documents in which project owners describe the enterprise and its potential effects in front of the local or national government, as well as making a statement to the international community about the social and environmental viability of the enterprise. EIA's are increasingly seen as supporting the acceptability and hence the financing of a company's enterprises.

In recent years, a number of energy generation, energy transmission and mining projects have encountered serious delays in the EIA regulatory approval process, and even rejections by the regulatory authorities. This has had significant effects on the owner company's projects and even international reputation.

This proposal of a peer review methodology is addressed to those providing technical and strategic review to clients that are in the process of preparing an EIA for a major capital enterprise. The proponent of such an enterprise is frequently faced with evaluating the integrity and quality of a complex, multi-volume document covering a range of social and environmental disciplines. The proponent needs to reduce this document to a brief summary and recommendation with regards to its submission to the government and exposure to an international audience. To this end, the review process is designed to evaluate the submission risks of the EIA, both in the local and international evaluation scenarios.

This methodology does not address the parallel activities of public participation and community relations, nor the engagement with the public and the authorities subsequent to the EIA submission.

THE REVIEW PROCESS

There are basically three parties involved in the review process: the project owner or client, the EIA authors and the team of independent reviewers. The project owner should employ the reviewer. The reviewer should interact technically with the EIA consultant without taking control of this party's activities, and the reviewer should provide information about the review to the project owner. This maintains the project owner informed about the process, and enables the owner to take critical decisions. The earlier the reviewer is employed, the more effective the review will be.

The review is performed by the independent reviewer, using an interactive spread-sheet which is populated with review evaluations and observations and shared with the client company and the authors of the EIA. It serves as a live document during the review process which allows all parties to follow the audit-style questioning and responses throughout the review.

It is an interactive process in which the client, the EIA consultant and the reviewers work together, on

successive versions of the EIA. As long as the reviewer maintains the over-riding objective of verifying that the content and quality of the EIA is sufficient for submission in the national regulatory regime and for exposure to the international audience, rather than attempting to improve and perfect the EIA, the methodology acts as an efficient and objective tool that supports the decision making process.

METHODOLOGY

The peer review methodology being presented has as an objective to reduce a document of thousands of pages to a few summary lines. This summary represents the main elements that support the decision to submit or not submit the EIA to the regulators.

The methodology is carried out by dividing the EIA into individual environmental components for review. This division enables the reviewer to follow the development of each component in a logical way from its characterization in the baseline, through the identification of impact sources, impact and risk assessments, prevention and mitigation measures and monitoring plans. Components are grouped in different environments or environmental systems, as follows:

- **Geological Environment:** geomorphology, geology, seismology, cryo-geology, and hydrogeology.
- **Hydrological Environment:** meteorology, groundwater, surface water, geochemistry, hydro-geochemistry and aquatic life.
- **Biotic Environment:** soil, vegetation, habitat, wildlife, biodiversity and ecology.
- **Land Use Environment:** land use, landscape, cultural heritage, and protected areas.
- **Built Environment:** air quality, noise, vibrations, transport and infrastructure.
- **Socio-Economic Environment:** demography, welfare, life-style, economy and economic activity.

The evaluation criteria consider the following questions for each EIA component:

1. **Sensitivity:** What is the scientific relevance for this project? And what is the relevance perceived by local authorities? The sensitivity of each environmental component is a complementary factor that will be weighted in the final risk assessment.
2. **Statutory Compliance:** Do scope and content comply with statutory requirements? The study must comply with all binding statutory requirements, which are defined by regulations regarding the environmental assessment of industrial projects.
3. **Data Sufficiency:** Is there enough data to justify the analysis of important issues? The study should cover the area of influence of the project, and data obtained should be representative of said area for an adequate period of time in order to characterize seasonal variations of the environmental component analysed. Regulated parameters should be represented by the measured variables.
4. **Quality of the analysis:** Have a good analysis and data interpretation been conducted? Do the analysis and data interpretation support the conclusions that are presented? The methodology used for analysis and the quality of data interpretation should follow the state of the art of environmental assessment. Thus it may be concluded that baseline information and project data have been properly analysed to justify assessments regarding impacts and risks of

the project. It will also ensure that adequate prevention and mitigation measures have been adopted for the scenarios under evaluation.

5. **Consistency of the study:** Is there consistency and coherence between components regarding data, presentation and conclusions? Environmental components that are directly related should be treated and analysed consistently. This situation should be reflected by the supporting data, cartography, and conclusions in these components.

The qualifications in each of these review factors must be based on specific observations, such as shown in Figure 1. The comments made by the reviewer, should be concise and strategic, rather than scientific-analytical. The observations made on the EIA will be presented quoting specific texts, tables or figures in such a way that the reviewer can identify if observations have been answered in the successive versions of the document. The reviewer follows up the observations as the progressive versions of the chapters are issued.

Component	N° Obs	Chapter	Cita	Reviewer's Observation on the draft version	Author's Response	Resolution in Rev.0?
General topics Technical	8	3	3.1	Se utilizó el Art. 11 de la Ley 19.300, sin la modificación de la Ley 20.417, la cual agregó localización en o próxima a sitios prioritarios, humedales protegidos y glaciares.	Se corrige la letra d) del artículo 11	
General topics Technical	11	3	3.1 / General	Debería incluirse como residuos los botaderos mineros, incluidos los minerales de lixiviación y los depositos de relaves. Deberian ser discutidos como residuos sólidos cuando se traten los articulos 5 y 6.	No se incluirán por el momento estos residuos en el presente análisis. La estrategia será considerarlos propios de la actividad minera y evitar el PAS 93.	
General topics Technical	12	7	General	Se debería establecer o confirmar los nombres que se van a usar para de cada uno de las instalaciones del proyecto.	Una vez congelada la descripción de proyecto se dará una revisión a los nombres de las instalaciones incluidas en cada una de las fichas de cumplimiento.	
Geomorfología	8	2	General	El área de Estudio no cubre el área mínima necesaria para una correcta localización de las geoformas, en función de las localizaciones de las obras proyectadas (Ej. Zona emplazamiento Pila de Lixiviación)		
Climate and Meteorology	4	2	2.5	Hace falta una descripción del fenómeno El Niño (ENSO) y su manifestación en el área del proyecto.		

Figure 1: The Observations Table

Finally, each component is evaluated in one of four categories according to its level of preparation for presentation in the EIA, taking into account the considerations mentioned above. To reach these results, the methodology uses the following rating matrix in relation to questions that have been made to each component, in the items of: Regulatory Compliance (REG), Data Sufficiency (DAT), Quality of the Analysis (ANA) and Consistency of the Study (CON). At this point it is critical to understand if the client requires the international bankability of the EIA to be assessed. If so, the four factors are rated against international standards such as IFC guidelines and Equator Principles. This last point is optional given that some client companies are not interested in seeking international bank funding.

In the rating matrix shown in Figure 2, for each environmental component the quality of the document is rated with respect to the four factors described above. L stands for low quality, M for medium and H for high. Working from left to right, the assignment of L's, M's and H's results in a valuation in one of the four levels described below, equivalent to "level of preparation" or "risk of presentation".

Risk Qualification					
	Factor				
Preparation by Component		Reg	Dat	Ana	Con
	1	L	L	L	L
	1	M	L	L	L
	2	M	M	L	L
	2	M	M	M	L
	3	H	M	M	M
	3	H	H	M	M
	4	H	H	H	M
	4	H	H	H	H

Legend of valuations			Legend of review conclusions
H	High	4	Suitable for assessment with international standards.
M	Medium	3	Involves low/moderate evaluation risk regarding national assessment but may not suitable under assessment with international standards.
L	Low	2	Involves high evaluation risk because of deficiencies regarding data, analysis, final result or presentation form.
NA	Not Applicable	1	Does not have an adequate approach, information or analysis to be presented in the EIA.

Figure 2: The Rating Matrix

These results are entered into a tabulation of the level of preparation of the EIA as shown in Figure 3. In this example, the valuation of the treatment of the various components is very irregular, with values between 1 and 4. The EIA author would be expected to re-work the documentation in successive versions in order to attain values between 3 and 4.

Finally, the review team compiles a summary of the evaluations to assign a final qualification to the EIA in terms of risk, or level of preparation of the EIA as a whole for submission to the authorities, taking into account the sensitivities of those components whose documentation has been evaluated as at greater risk.

		Version reviewed		Evaluation				
Themes	Components	2 Baseline	Sensitivity (national)	Regulatory Compliance	Data Sufficiency	Quality of Analysis	Study Consistency	Preparation Level / Risk
Geological Theme	Geology	Rev C	L	M	M	M	H	3
	Geomorphology and Cryoforms	Rev C	M	L	L	L	H	2
	Geohazards and Seismic	Rev C	H	M	M	M	H	3
Water Theme	Climate and Meteorology	Rev C	L	H	H	M	M	3
	Hydrology	Rev C	H	H	H	H	M	4
	Hydrogeology	Rev C	H	H	M	M	M	3
	Hydrochemistry	Rev C	H	M	M	L	M	2
	Aquatic Biology	Rev C	H	H	H	L	M	2
Biology Theme	Soils	Rev C	L	M	L	L	L	1
	Flora and Vegetation	Rev C	H	H	H	M	L	2
	Fauna	Rev C	M	H	H	H	L	2
Land Use Theme	Natural Resource Use	Rev C	M	H	M	M	M	3
	Landscape and Aesthetic View	Rev C	M	H	H	H	H	4
	Tourism	Rev C	M	H	H	H	H	4

Figure 3: The Evaluation Table

CONCLUSIONS

The EIA peer review is an appropriate tool for strategic decision making and quality control at the time prior to delivering an EIA to the evaluating authority. The proposed methodology achieves its goal in an objective and standardised manner with criteria that are transparent to all the participants. As the review progresses, it becomes interactive involving reviewers, the EIA consultant and the client company that owns the project. This interaction can result in the correction of concepts in the EIA as it progresses, leading to a finished product suitable for submission to the evaluating authority.

This methodology is being required by companies with major capital investment projects. So far it has been implemented in five projects in South America (Argentina, Chile and Peru): three mining projects ranging from USD 750 million to approximately USD 2,000 million investment and two energy generation projects with installed capacity in the range of 50MW to 500MW (Figure 4).

The methodology also has potential as a tool for evaluating authorities that have to coordinate the regulatory reviews of the various agencies that cover the different social and environmental disciplines.

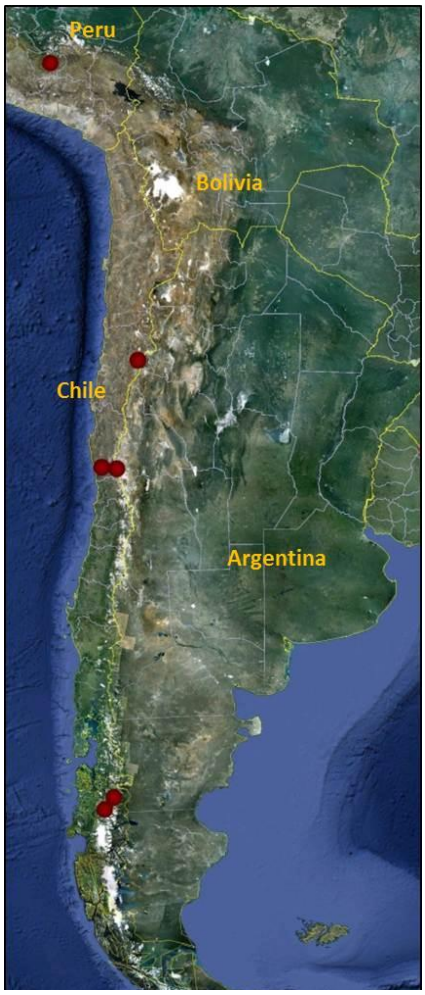

Figure 4: Projects that used this EIA Review Methodology.