

Sustainable management: a strategic challenge for a global minerals and metals industry

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Abstract

This paper refers to the concept of sustainable management as the management approach which efficiently integrates economic, environmental and social issues into the operations of the minerals and metals industries, with the aim of creating long-term benefits for all stakeholders, and securing the support, cooperation, and trust of the local community. Among many other issues, sustainable management deals with strategy, responsible project feasibility decisions, managing for operational efficiency, improved risk management, enhanced stakeholder relationships, and corporate reputation. Overall, it deals with seeking long-term competitive advantages through responsible management of environmental and social issues.

An essential requirement for sustainable management is the corporate commitment to the values of sustainability, but this is not sufficient. Also essential is the development of a business culture where sustainability is a high professional and business value. Furthermore, an organizational structure with specific roles and integration mechanisms and adequate management systems are also required.

Regarding business culture, a well-established business code is a necessary but an insufficient condition. Sustainable management relies on individual ethical conduct and trust to foster full participation of stakeholders and to encourage commitment among them. It allows decision making at appropriate levels in the organization and encourages individual risk-taking for continuous improvement. Without trust, social licence is not achievable.

In this paper, the concept of sustainable management is introduced as the management approach that integrates a business culture, strong leadership and an organizational structure that strives for long-



term economics benefits through sustainability. To achieve this goal, sustainability must be vertically integrated at three organizational levels (corporate, divisional and operational) and three functional levels (strategy, planning and implementation).

Introduction

The use of mineral resources has been fundamental to human activity; from housing to household goods, from industrial equipment to energy and from high technology to space exploration, mining has provided the basis of life to the human race. The mining industry produces energy, metals and minerals that are essential to economic prosperity and a better quality of life. As important as these benefits are, mining activity causes social and environmental impacts on communities that require a more responsible mining practice – it requires “Sustainable resource management”.

Many mining companies have acknowledged this challenge and have stated their commitment to the values of sustainability. However, the public perception of the environmental and social performance of the minerals industry remains poor.

Furthermore, significant driving forces are acting on the market whereby corporate performance in sustainable development issues is becoming increasingly related to measurable economic returns and increased value to shareholders. Better reputation is becoming a competitive advantage through improved control of business risks and increased business opportunities. In this context mining managers are expected to not only comply but lead in the development of increasingly demanding corporate policies and regulations for environmental control, safety and social responsibility.

Mining and Sustainable Development

The most cited reference to sustainable development is that published in 1987 by the World Commission on Environment and Development (the Brundtland Commission)[1], where sustainable development means “to meet the needs of the present generation without undermining the capacity of future generations to meet their needs”.

In most definitions, sustainable development integrates three separate strands of thought about the management of human activities. The economic dimension focuses on the economic needs of society, such as adequate livelihood and productive assets, and systems. The social dimension that refers to social and cultural needs, e.g. health, education, shelter, cultural institutions and norms; the third dimension, deals with the maintenance of ecosystems and the natural resource base.

In the context of the mineral resources industry, a notable reference was made in 2002 by the United Nations Environment Programme (UNEP) in a publication title “Berlin II Guidelines for Mining and Sustainable Development”, where it was stated that: “If sustainable development is defined as the integration of social, economic and environmental considerations, then a mining pro-

ject that is developed, operated and closed in an environmentally and socially acceptable manner could be seen as contributing to sustainable development. Critical to this goal is ensuring that benefits of the project are employed to develop the region in a way that will survive long after the mine is closed”.

Sustainable Management: The Challenges

The concept of sustainable management [2] refers to a management approach which efficiently integrates economic, environmental and social issues into operations, aims to create long-term benefits to stakeholders, including shareholders, and to secure the support, cooperation, and trust of the local community in which the company operates. Among many other issues, sustainable management deals with responsible project feasibility decisions, managing for operational efficiency, improved risk management, enhanced stakeholder relationships, and corporate reputation. Overall, it deals with seeking for long term competitive advantages through responsible management of environmental and social issues.

Today, most mining companies declare their commitment to the values of sustainability in their Vision, declarations and policies, but not many achieve an efficient integration of those values down into the operational levels of the organization. Corporate commitment is therefore necessary but not sufficient. Managing for the integration of sustainability into operations [3] is also essential.

The sustainable management challenge is well exemplified by the “Sustainable Development Frameworks” proposed by many multi-participant initiatives (ICMM, Global Compact and other). Clearly, these frameworks focus on business culture, structural integration, strategy implementation, continual improvement and other challenging management tasks.

The author’s concept of sustainable management integrates all the above concepts in the graphical model in Figure 1. In this model, sustainability must be vertically integrated at three organizational levels (corporate, divisional and operations) and three functional levels (strategy, planning and implementation). Besides, the implementation of sustainability goals at the different stages of the resource life cycle requires of an organizational structure with adequate integration mechanisms [4] and a business culture where sustainability is a high professional value.

The Business Case on Sustainability

There is ample evidence of the link between environmental and social performance and company financial performance [5]. However, the question of whether there is a business case for sustainability performance remains open to debate. Ultimately, any business case for sustainability requires that sustainable management practice leads to improved profitability and added value to owners and in this regard, the potential benefits of sustainability need to be quantified.



The quantitative evaluation of the above benefits and cost concepts may or may not show a business case. If a business case exists, sustainable management will be driven by business considerations and become fully integrated in the business cycle.

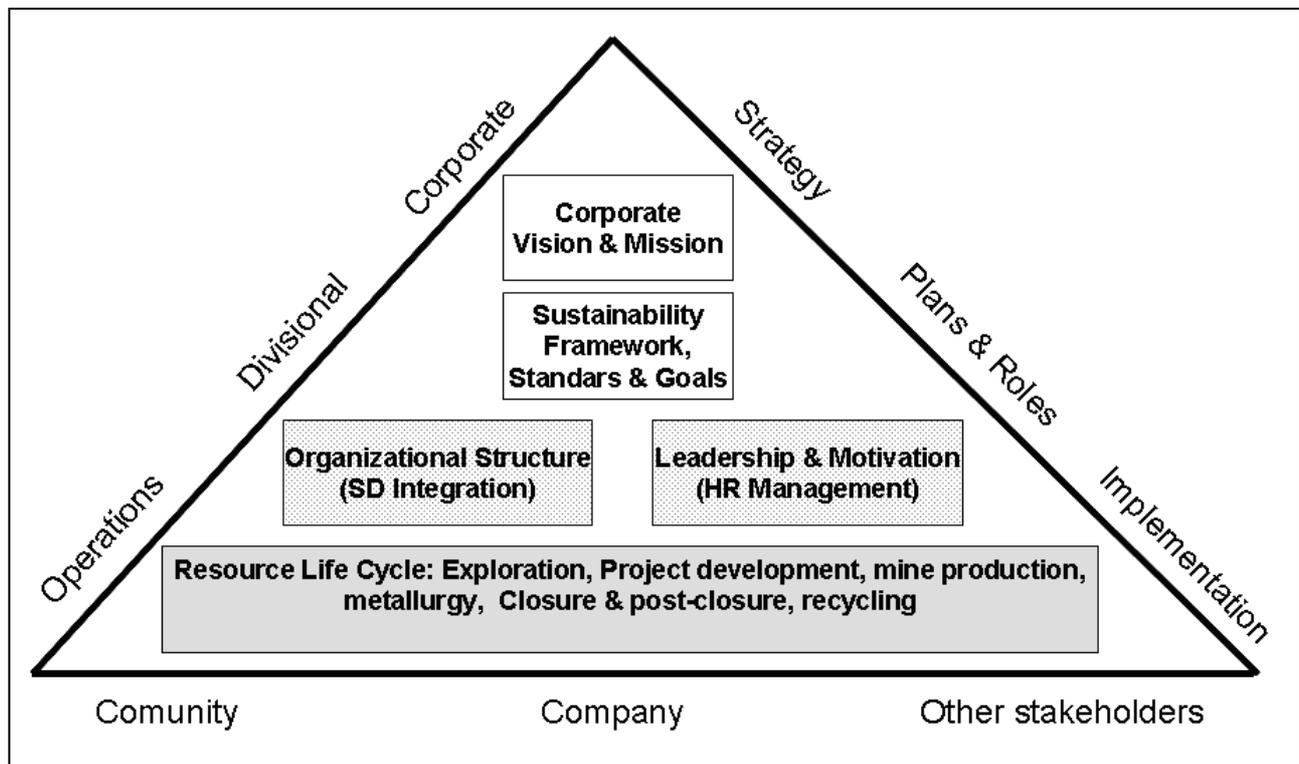


Figure 1: Sustainable Management of Mineral Resource Companies: An integrated model

The potential benefits of sustainable management are the following:

- Corporate reputation and lower risk profile
- Higher operational efficiency derived from sustainable management of safety and health, energy usage, ore resources, and the production processes.
- Improved planning and control derived from the implementation of management systems (e.g., ISO 14001, ISO 9001), and the continuous improvement philosophy associated with sustainable management.
- Advantage in access to mineral resources resulting from lower resource acquisition cost and reduced project failure rates.

- Advantage in recruiting and retaining human resources resulting in improved leadership and motivation, initiative and decision making at lower levels.
- Easier and more economical project financing derived from the perception by investors of the positive financial consequences of Social Licence in financing new mining projects.
- Lower project development costs through improved stakeholder's relation and faster permitting process.

Achieving these benefits has an associated costs related to an increased company structure, the partnership or sponsorship in community development projects and, in general, the costs of earning and maintaining the social licence.

Our personal perception is that, at present, many mining companies are already in the position to substantiate a business case from sustainability performance and are probably achieving the competitive advantages of sustainable management.

Looking to the future, the generalization of a “business case” for sustainability [6] will be enhanced by the increased social and political sensitivity on environmental and social issues and the corresponding increase on the prices and the production costs of mineral commodities.

Sustainable Strategy: Specificity of the Minerals Industry

Because of certain specificities, strategic planning of mining and commodity companies is particularly complex.

Any mining or metallurgical company needs what is called “social license to operate”. Although the feeling of mistrust that has often obstructed the relationship between mining companies and some of their stakeholders is now less present, a certain degree of caution still remains. It is evident that mining and metallurgical activities are still been regarded by the public as threatening and hazardous. It is obvious that a strategic plan for developing such an activity may not be limited to the operational, market and financial considerations. It must include an exhaustive analysis of the social, political and environmental implications that could be crucial for the feasibility of the project.

The interaction between a corporation and its stakeholders must respond to a well established, coherent and consensual plan, aligned with the corporate strategy. Besides the marketing communication which aims to improve the commercialization of products or services, corporate communication must build an appropriate image of the company itself, creating the best possible reputation among all stakeholders. It must be professionally and efficiently designed and executed, as operational and functional managers do not necessarily have the appropriate skills to perform such a task.



A key strategic issue are the “stakeholders” . The concept of “stakeholder” as relates to sustainable management was promoted in the 1980s by R. Edward Freeman [7], refers essentially to a party which affects, or can be affected negatively or positively by, the company’s actions. The concept is applicable to any business activity, but it has found an extensive field of application in the minerals industry, due to the great diversity and magnitude of its potential (positive and negative) impacts and the controversial legacy of mining around the world throughout history.

Identifying and interacting with the relevant stakeholders is essential to producing good results. But much still needs to be learned about how to identify and involve stakeholders, as the World Bank was to note, which suggests that a good way to identify appropriate stakeholders is to start by asking questions:

- Who are the “voiceless” for whom special efforts may have to be made?
- Who are the representatives of those likely to be affected?
- Who is responsible for what is intended?
- Who is likely to mobilize for or against what is intended?
- Who can make what is intended more effective through their participation or less effective by their non-participation or outright opposition?
- Who can contribute financial and technical resources?
- Whose behavior has to change for the effort to succeed?

A list of prominent stakeholders (not necessarily in order of importance) with direct or indirect interests would be shown in Table 1. Interaction with each relevant stakeholder requires of a specific strategy but high corporate standards, transparency, clear targets, and recognition of stakeholder’s perspective must, among others, be common factors.

Reputation is an important intangible asset in mining companies. It can be improved in the frame of an intelligent strategy or degraded by wrong policies and poor communication. It is not only a matter of prestige. It allows the companies to be better accepted by their environment and, as a consequence, increase their competitiveness in many fields.

Contrary to most activities, a mine’s geographical situation is imposed. A mine can not be moved like a factory or a commercial unit. Once the ore body has been discovered, some of the parameters of the future business are already locked: geographical situation, political environment, availability of energy and water, transportation conditions, climate, etc. Little can be done to change these parameters.

The mining activity strongly interacts with its social and ecological environments. Even if the apparent economic returns for the host country (or region) may constitute a powerful incentive, the drawbacks of the mining activity are considerable. The conditions imposed will surely be constraining, sometimes not counterbalancing the benefits expected from the operation.

Another particularity of the mining and mineral activities is the relatively small number of actors. Mining production involves a relative small number of companies. The concentrations that have taken place lately reduced even more this number. Smelter activity is even more concentrated, with typically a smelter having capacity to process the production of several mines.

Table 1 . An Example List of Stakeholders in the Minerals Industry



COMPANY'S DIRECTLY-RELATED PEOPLE, BUSINESS AND INVESTORS
Company's directly-related people, business and investor institutions Shareholders Financial and lending institutions & Financial analysts / The World Bank Employees (and employee's families) Contractors, suppliers and customers
GOVERNMENT, FROM MUNICIPAL TO NATIONAL OR EVEN INTERNATIONAL LEVELS
Legislators, regulatory bodies, members of the judiciary, security forces and the executive/ministries Ombudsman
INTER-GOVERNMENTAL ORGANIZATIONS
United Nations bodies (i.e.: focused on Corporate Responsibility, Human Rights, Environment, Labor..) Regional bodies with authority for policy making and enforcement (e.g., EU, OECD, ASEAN, OAS, ...)
SOCIETY
Directly affected parties: host and surrounding communities; landowners.. Indirectly affected parties: Agriculture; Private business; tourism; competitors, etc. General public and broader society: local to global NGOs: environment; development; humanitarianism, human rights; citizen platforms; etc Religious institutions Religious protagonists with an effect independent of institutions (i.e: a local priest) Media (press and leaders of opinion) Political groups Labor unions Professional associations and scientific/technological bodies and universities Indigenous peoples and individuals Minorities and other historically marginalized groups The Environment

Prices for some important mining products are determined daily by organized markets (London Metal Exchange, COMEX, and NIMEX and others) and are applicable to most transactions. These markets provide instruments (derivatives) that allow the sellers and the buyers to operate with future prices, fix prices over a certain period, or limit the range of prices applicable during a given interval of time. However, not all mining products' prices are determined by commodity exchange pricing. Some like coal, bauxite, iron ore, or minor metals are negotiated directly between sellers and buyers.

Corporate Social Responsibility

The World Business Council for Sustainable Development states: “Corporate social responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as the local community and society at large”. It is also understood that CSR implies the voluntary acceptance by the the companies of social responsibilities, sustainability standards and codes of ethics above and beyond legal requirements.

The business value of CSR is that it can help safeguard license to operate; facilitate access to capital; contribute to reputation, and enhance stakeholder engagement, including employees. CSR can help companies contribute to sustainable development, but at its most basic stages it is a risk mitigation technique – and not practicing it could contribute to damaged public trust, raise questions with policymakers, cause unfavourable comparisons with competitors, increase community unrest, and potentially impact project financing.

Some principles, guidelines and codes of conduct that resource companies can use to develop their commitments include:

- OECD Guidelines for Multinational Enterprises and for Corporate Governance,
- United Nations Global Compact,
- The Prospectors and Developers Association of Canada (PDAC) Guidelines,
- Global Sullivan Principles,
- The International Council of Mining and Metals (ICMM)
- Global Reporting Initiative (GRI) guidelines.

Within most mining companies, corporate values typically include considerations towards ethics, social license, and safety and clearly represent a commitment to upholding standards and codes of conduct relative to company employees, local communities, the environment, and stockholders/investors. It is essential that these values be understood by every employee within a company regardless of position or classification, and are discussed regularly. Employees should be recruited and developed with respect to these values, and be held accountable to insure that they are followed.

Human Resources and Social Licence

While the impact of labor productivity and cost on the economics of mining operations have long been the main focus of management in the minerals industry, the traditional philosophies toward human resources and workforce issues have recently undergone substantial change.



These changes are symptomatic of societal changes in employee attitudes but also relate to the challenges facing minerals industry companies as a consequence of government regulation, negative public image, and rapidly increasing skill competencies required of today's miner. In fact, the ability to manage talent and understand the motivation and needs of workforce are now skills that must be fundamental to sustainable management in the minerals industry.

Throughout most of the world, one of the most prominent risks now facing mining and resource companies involves their ability to develop and maintain a social licence to operate. While the legal authority to mine a specific property is embodied in the regulatory consent granted by governmental agencies, this "right to mine" is only as valid as the explicit or implicit social license granted by the potentially affected communities and stakeholders. In exchange for this social license, mining companies make a commitment to local communities to provide tangible benefits and improve the quality of life of residents during and after mining.

The Social License is a covenant drawn up between the company and the affected communities and stakeholders. The nature of social licence is unique for each company and community and is dynamic in as much as both the circumstances of the mine and the community are constantly changing. From the perspective of most companies, financial risk is normally a paramount issue. From the perspective of the community, any potential risk that may result in the degradation of quality of life will likely be a major concern.

While often overlooked, employees play a critical role in facilitating this social license. Employees serve as a conduit for disseminating information about the company and its practices to the general public and hence, everything associated with human resources management, from recruitment to skills development and safety, either directly or indirectly impacts a company's reputation and how they are perceived by local communities. In addition, employees also convey important information back to the company about social and community issues, a feedback which is critical for assessing the outcomes of specific social programs and identifying key factors that might indicate community needs or potential conflicts.

A company's ethics are inherently defined by the behaviour of its employees. Ethics is a surprisingly complex subject that goes beyond the scope of this paper. However, a few comments serve to introduce this extremely important topic. While there are often well-defined boundaries that establish the limits of ethical conduct based upon employee morals, regulatory policies, industry standards, and corporate values, a company's ethics are usually defined by the behavior of its employees with respect to "grey areas", that is, where there is not an absolute boundary separating ethical and unethical behavior, or when in the absence of prescriptive policy or standards, employees define ethics based upon their own interpretation of the situation.

For example breaches of ethics such as theft and lying are easy to define but, Is it ethical to exaggerate for personal gain?. How about corporate intelligence? , Most people in industry would

probably indicate that this type of behavior borders unethical conduct but might be situational. It is the grey areas that define a company's culture.

Integrating Sustainability into Company Structure

As an important area of corporate strategy, sustainability must be integrated within the corporate decision-making process at all management levels. This integration process, often difficult and challenging, requires an organizational structure with integration mechanisms, management roles, plans and systems ensuring proper communication, coordination and control [4].

Integration roles are individual positions or ad-hoc committees with accountability for the integration of sustainable development values and objectives. Integration plans and systems are the policies, standards and the management tools which are required to carry out sustainable management at operations level.

Integration roles and plans are hierarchical (Figure 2), where integration roles act on the line of hierarchy and integration plans and systems help to integrate the decision-making processes at all operational level.

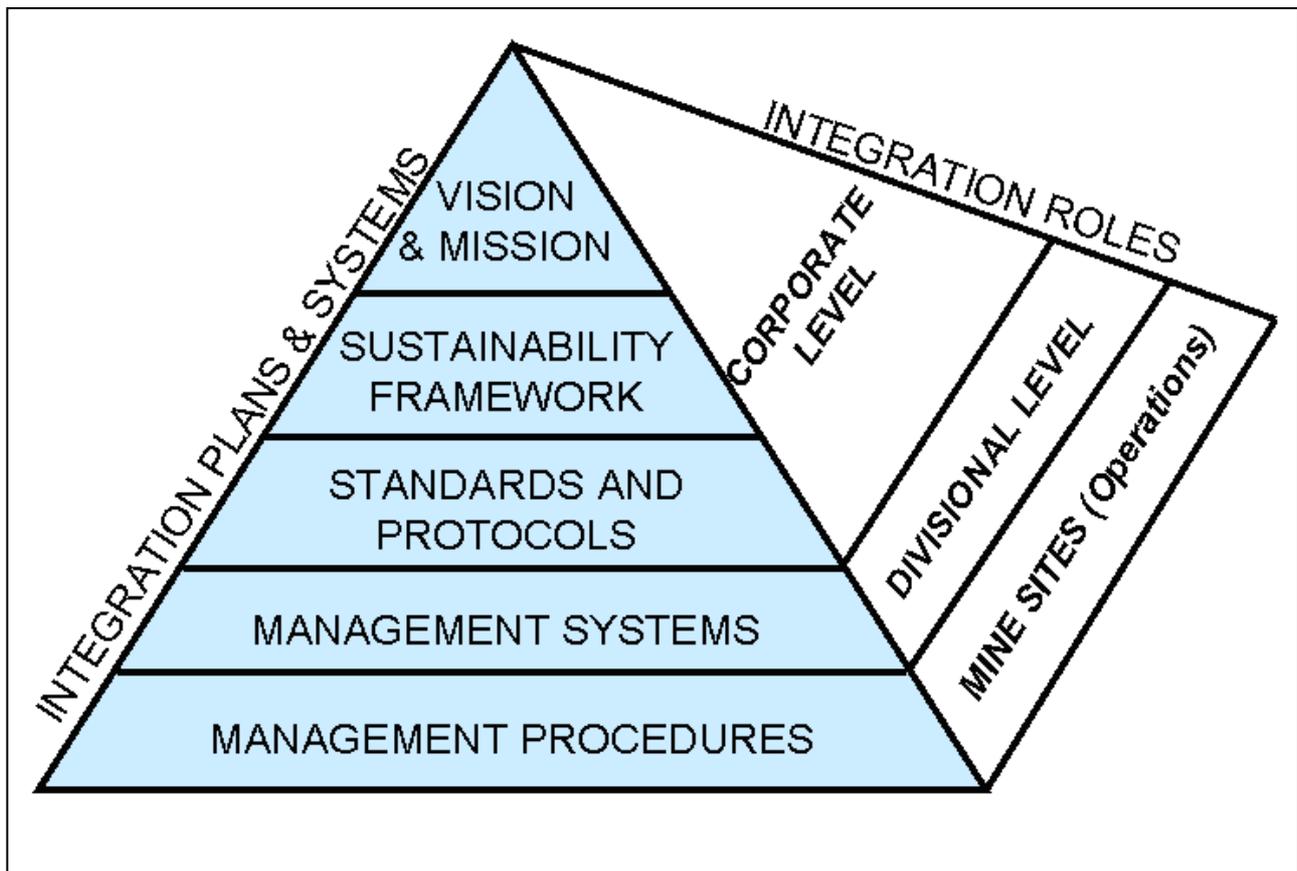


Figure 2. Hierarchy of Sustainability Management System



As an example, Figure 3 exemplifies the structural model for a large minerals corporation and highlights the integration mechanisms for sustainable management. The model would also be conceptually valid for medium size or small companies, where the divisional level would not exist.

At corporate level, three roles are key to sustainable management: The CEO, the SD Committee, and The VP Sustainability. Among other tasks, the VP Sustainability assists divisional heads on sustainability matters and the development of sustainability values and culture. At the divisional level, the Divisional Managers play a key role in the efficient integration of sustainability standards, the implementation of SD management systems and SD performance evaluation and reporting. At operational levels, the site Manager, Sustainability report to the operations general managers with overall accountability for the implementation of sustainability procedures at operational level.

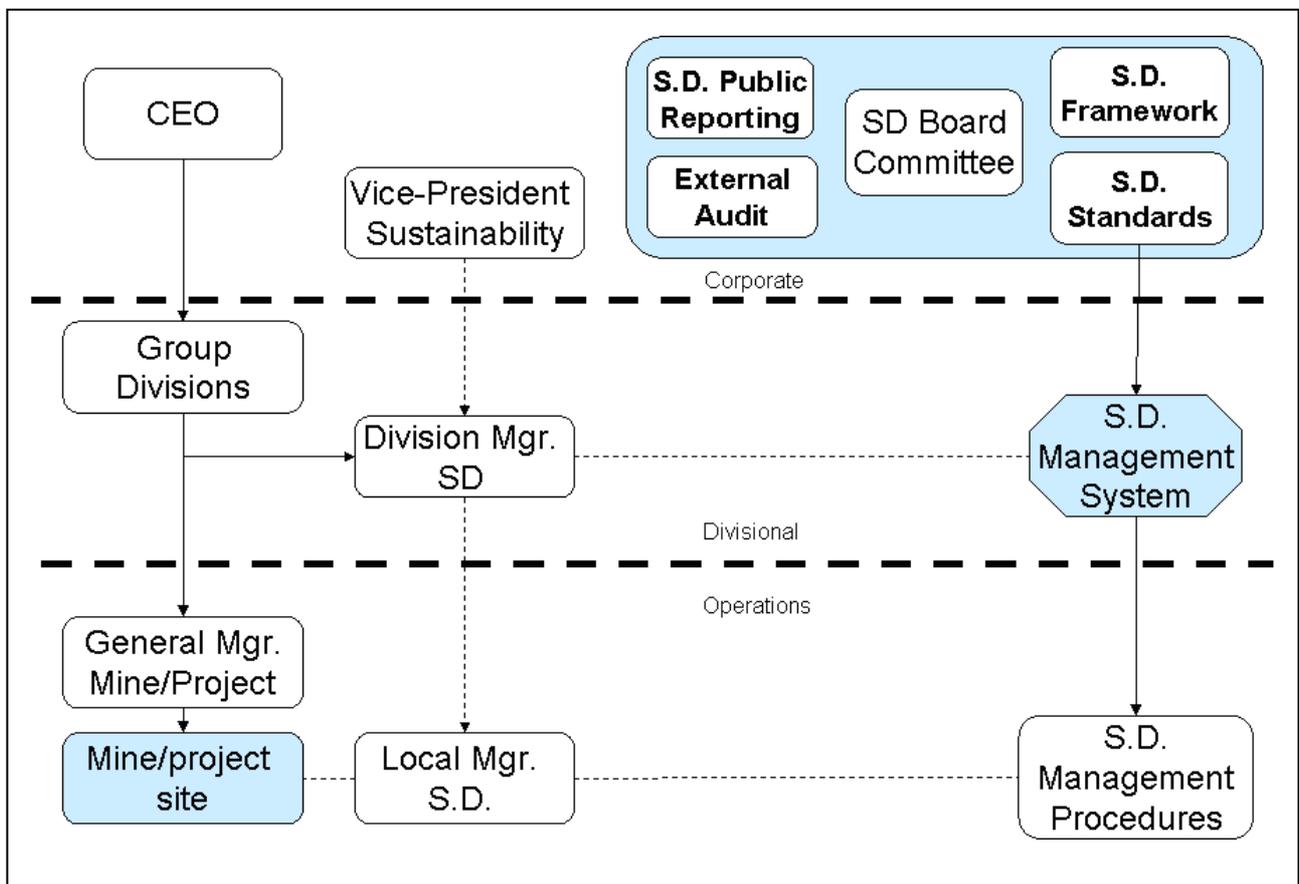


Figure 3. The process of integration of sustainability in the company structure

The SD Standards are a set of management standards issued to interpret and support the Sustainable Development framework and policy on sustainability at all management levels in the company.

In many cases, SD Frameworks and Standards of mining companies are designed in alignment with international SD frameworks (ICMM, UN Global Compact, etc.). Likewise, Sustainability Reports are often prepared in alignment with global reporting standards providing guidance on how to report on SD performance. One of these standards, the Global Reporting Initiative (GRI) is probably the world's most widely used in the minerals industry.

Furthermore, a Sustainability Report must be credible and generally accepted by all stakeholders and potential investors. Without independent assurance (Audit), credibility will not likely be achieved. The objective is to provide independent assurance that the management practice and performance is in compliance with the SD standards and public reporting of the Company. Assurance practices of mining companies vary widely but there is increasing use of standards such as AA1000.

As an example, Freeport Mc-Mo-Ran Copper and Gold (FCX), plays a leading role by promoting good practice based on sound science and sustainability in alignment with the "ICMM Ten Principles for sustainability" (Table 2). Also, as a member company of ICMM, FCX is committed to report its SD performance in accordance with the reporting standards of the Global Reporting Initiative (GRI).

Table 2. The ICMM ten principles for sustainable development

THE ICMM TEN PRINCIPLES

1. Implement and maintain ethical business practices and sound systems of corporate governance.
2. Integrate sustainable development considerations within the corporate decision-making process.
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.
4. Implement risk management strategies based on valid data and sound science.
5. Seek continual improvement of our health and safety performance
6. Seek continual improvement of our environmental performance
7. Contribute to conservation of biodiversity and integrated approaches to land use planning
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products
9. Contribute to the social, economic and institutional development of the communities in which we operate
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders



Publicly listed Mining Companies are required by stock exchange commissions to issue an independently assured annual report on sustainability but many non-listed companies are considering that independently assured public reporting is essential for the positive public reputation with respect to Corporate Social Responsibility [8]

Managing Project Development and Operations

The detailed description of systems and procedures required for the implementation of sustainable management in day to day operations is beyond the scope of this paper. However, we will highlight that any approach to sustainable operations management relies on the identification of expectations expressed by local stakeholders and its integration with those identified in corporate sustainability standards.

Table 3. Management Considerations and the Seven Themes to Sustainability

Theme	Management Considerations
Engagement	Involving stakeholders in the design, operations and closure of mine waste management facilities, acknowledging the importance of a licence to operate
People	Worker and surrounding population health, training of personnel, implementation of modern management approaches that value employees
Environment	Site specific ecological information, evaluation of environmental stress as a result of the mine activities
Economy	Project and life cycle costs, contributions to the local and regional economies
Traditional and non-market activities	Knowledge of traditional (indigenous) activities and customs, protection and access to significant traditional resources
Institutional arrangements and governance	Compliance with regulatory requirements, active participation in ongoing regulatory development, compliance with corporate policies, participation in voluntary regulations, e.g. the Cyanide Code
Synthesis and continuous learning	Consideration of project/facility alternatives, a commitment to ongoing reviews and improvement

In this regard, Van Zyl, et al [9] describes a powerful methodology - “Seven Themes of Sustainability” – which may be used to develop broad management guidelines. The methodology consists in analyzing management decisions from the perspective of the “Seven Themes”, as described in Table 3, to identify some sustainable management considerations.

Conclusions

Sustainable Management deals with seeking for long term competitive advantages through responsible management of economic, environmental and social issues. Achieving these advantages has an associated costs related to the development of a sustainability driven business culture, the partnership in community development projects and, in general, the costs of earning and maintaining the social license.

The social licence to operate relies on individual ethical conduct and trust to foster participation of stakeholders and encourage commitment among them. Therefore, sustainable management requires a business culture where sustainability is a self-motivation professional value and decisions are driven by commitment rather than compliance with policies and regulations.

In the context of the minerals industry, sustainable management refers to a management approach that integrates sustainability across the organization: i) At all organizational levels (corporate, divisional and operations), ii) At all functional levels (strategy, planning and implementation) and iii) In all stages of the resource life cycle (Exploration, project development, mining and metallurgical operations, closure & post-closure).

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