Mining and Society: Essential Elements to Support Sustainability in Community Engagement and Development

Client: Dr. Marcello Veiga
Institute of Mining Engineering, University of British Columbia

Supervisor: Dr. Budd L Hall
School of Public Administration, University of Victoria

Second Reader: Dr. Maria Barnes
School of Public Administration, University of Victoria

Chair: Dr. Kim Speers
School of Public Administration, University of Victoria

Submitted by:
Chafika Eddine, MACD Candidate
School of Public Administration
University of Victoria
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Executive Summary

Introduction

The purpose of this report is to identify basics needed to support sustainability in community engagement and development, and to propose an update for the Mining and Society course (Mine 555) in the University of British Columbia (UBC) academic program on mining engineering. The expectation is that by emphasizing the essential elements to sustain engagement and development, the UBC course will be able to leverage influence on future professionals who will likely be in positions of decision and, in turn, will have the power to affect change.

The principal question leading this study is: what are the essential elements to support community participation and development in complex environments, and how to maximize these concepts on the education of future professionals to affect change?

The main subject of interest addressed in this study is populations living in a mine’s impact zone - the mining hosting communities. The main query is followed by a secondary question investigating whether community participation plays an important role in the sustainability of a project development. To complement these questions, a search for effective tools to enable the sustainability of community engagement and development is carried out. The proposal is to incorporate these responses in the Mine 555 program.

Methodology

The methodology is informed by a qualitative approach, using observations and document analysis, and explores whether multi-stakeholder collaboration and cooperation contribute to the sustainable development of local communities surrounding mining operations.

The research methodology includes a comparative analysis of standards and framework accepted as international best practices by the mining industry, a proportional examination of courses equivalent to the Mining and Society module, a series of case studies on community development and mining, and observations of community development in action in non-mining environments.
contexts in India. The expectation is that these analyses will fit together to achieve the research objectives by intertwining visions and missions of principles with governance, identifying gaps that need fulfilling.

One concept that gives direction to this project is grounded on critical system thinking – a framework that aims to fuse diversity of approaches and participatory methods to address complex challenges. It is based on stakeholder ownership and understanding of systemic change process. Another concept is a flexible approach to the theory of change, explaining how and why a wanted change is expected to happen. Theory of change will be used as a tool to mapping out a plan to lead to desired long-term goals.

**Key Findings**

In order to make recommendations to complement the syllabus for the Mine 555 program, a search for the essential elements to sustain development and empower community engagement in complex environments was launched.

The findings imply that three fundamental components must be present for development to be sustainable: guiding principles, capacity building and good governance. These elements must exist not only within the organization but also in the communities where development is taking place. It is suggested that for an organization to achieve sustainability in its efforts towards community development, and to be effective and efficient, principles need to be developed into standards and implemented through good governance.

An important step of this study is gained by experiences at the Society for Participatory Research in Asia (PRIA), in India, specifically observing their know-how in relationships and developments with communities that were not related to mining. Such understanding serves to identify the need for centralizing efforts on capacity building that must be ensured at the following levels:
• Individual: soft and technical skills provide competence to achieve objectives. The human ability to propose, request, demand, give feedback, implement, plan, participate and discuss;

• Organizational: effective and efficient management through good governance. Local institutions are responsive and accountable for fulfilling people’s needs by facilitating development and processes with community participation; and

• Institutional: the full use of local resources and networks by exploring partnerships and cooperation.

Capacity building is usually identified as a process for individuals and organizations to develop and strengthen resources and skills in order to complete a task with competence.

Knowledge and awareness appear as vital components in enabling capacity for stakeholders: mining companies need to expand their vision of community development and free themselves from an authoritarian approach; communities require a discernment of their rights and the potential they can have in dictating their own futures; and governments ought to explore the opportunities to mediate and to orchestrate such dichotomy.

Considering the complexity of the environment where mining mostly operates, the findings suggest that industry should center its efforts on ensuring the three elements are present in their management systems. One major component implicit in these elements is the significance of capacity enhancement. Capacity enhancement is required for community participation to be genuinely achieved and for stakeholders to become the owners and managers of their growth.

Education needs to be reoriented from a technical to a holistic approach, where social, environmental and economical aspects merge in order to support sustainability. A multi-stakeholder collaborative strategy towards a comprehensive reflection seems to be the path to achieve sustainable development.
Options to Consider

The results of this study point to a conclusion where emphasizing the three essential elements - principles, capacity and good governance - in each class throughout the Mine 555 course, could affect change in the future. The elements could be inserted in each of the classes by motivating students to identify examples where the elements were applied or where the lack of their existence caused a negative impact. Active learning strategies are suggested by asking students to create a fact sheet to debug industry’s myths, and to create a smart measures guideline to drive community engagement and development. Another option is to invite professionals and other stakeholders to participate in the course and create an environment where they would feel safe to share their experiences with openness and candor.

In a time where mining is required to take a socially responsible position in the world, it is essential that the content of the Mine 555 course is aligned and updated with mechanisms and foundations that support and advocate inclusion and diversity through capacity building and public participation in development that affects communities’ present and future.

In this internet era where voices can no longer be reduced by the powerful hands of the industry, independent organizations are able to more easily amplify their concerns via social media platforms. This makes it unacceptable for mining companies to have actions without proper considerations to the negative effects and impacts and on account of communities’ losses.
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1.0 Introduction

The inspiration for this project came from the local communities involved in mining operations, an experience gained through years of field exposure mostly in Canada and Latin America. During this journey, it was not unusual to come across people in different industry positions with little knowledge concerning social and environmental impacts of their work on local communities.

1.1 The Gap

The problem addressed in this study is the lack of education that results in the overprotective and authoritarian approach mining companies have been mistakenly applying when dealing with their hosting communities. For instance, companies have deficiency in making decisions positively affecting communities near mining operations. Communities, on the other hand, need to be able to voice their concerns with regards to mining, but often they require the skills or support to do so. Without these skills and support they are unable to have meaningful control over their futures. This frequently leads to conflict within the mining industry.

Mining companies can impact communities by generating conflicts or by taking the opportunity to contribute to a healthy development where communities can participate and own their future. The initial hypothesis explored in this study suggests that if mining companies concentrate their efforts in fundamental elements necessary to support community engagement and development (principles, capacity and governance), they can generate win-win circumstances for themselves and other stakeholders involved, including the communities and governments.

A root of the deficiency might be located in the content of university programs which is concentrated on technical aspects. Without a holistic view, creating professionals with a narrow perspective towards social, environmental and economic impacts on communities is a result. To impact the next generation of mining leaders with greater knowledge is powerful as they will be
in positions of decision with capacity to influence a change. Hence, it is suggested that awareness about the consequences of mining interfering with the development of hosting communities, combined with knowledge of the power of applying the essential elements (principles, capacity and governance) in community engagement and development, is a good recipe for professionals to balance with their technical skills and make decisions that will have a positive impact on stakeholders.

1.2 Project Objectives and the Client

The client of this project is Prof. Marcello Veiga who is in charge of the program Mining and Society from the Mining Engineer Faculty of the University of British Columbia (UBC). The purpose of this study is to complement the content of a course considered to have the second best mining engineering courses in the country (University Rankings, 2017).

This review seeks to enlighten students with a stronger focus on the key concepts that impact engagement and development, which is to create capacity for the involved parties to engage and contribute to the sustainable development of communities affected by mining.

The goal of this examination is to gain a comprehensive understanding of the key elements necessary to enhance stakeholder participation in order to achieve a more effective contribution to sustainable development. Once a broad comprehension is achieved, the next step is to assess the content of the Mining and Society course to identify gaps in the sphere of education that need to be addressed, and ultimately to propose an adjustment of the Mining and Society course syllabus. The anticipation is that the course becomes a platform of knowledge and awareness to the next generation of mining leaders.

This study investigates expectations from society in relation to mining by reviewing industry’s principles, standards and best practices, with the aspiration of conveying the most essential elements to attain sustainable development and support community engagement in complex environments.
The query that guides this analysis is around defining key elements to empower community participation in development. The first research question is:

**What are the essential elements to support community participation and development in complex environments, and how to maximize these concepts on the education of future professionals to affect change?**

To complement and support the primary research question, the following secondary questions hope to address whether the mining industry requires different approaches to what are presently in use, and how the responses can be incorporated in the Mine 555 course:

- What is the role of community participation in development?
- What tools can be effective to enable community engagement and development?

1.3 **Rationale**

The Mining Engineering Faculty at UBC is proud of its curriculum that, it argues, has been providing best practices in mining since 1915 (Edumine, 2017). One of the components of the program is the Mining and Society course which is designed to address social impacts in mining (the course outline appears in Appendix III referenced on p. 14). The faculty strives to provide students with state-of-the-art content to support the sustainable development of the communities surrounding mining operations.

1.4 **Organization of the Report**

This report consists of eight chapters that identify the vital elements for sustainability in community engagement and development in complex environments, and suggest how to incorporate and emphasize such components in this Mining and Society graduate course.

Following this introduction, chapter two provides background information of the setting, the client and the organization where part of the research took place. Chapter three offers a review of the literature. Chapter four explains the methods and methodology used. Chapters
five and six summarize and discuss findings and arrive at the proposal of the fundamentals to sustain engagement and development in this context. Chapter seven offers options on how to integrate these elements into the Mining and Society course program, while the final chapter summarizes the results of this study and proposes future opportunities.
2.0  Background

This chapter explores the background of three subjects in this research: i) a prospect of the relationship between mining and society, ii) the Institute of Mining Engineering at UBC and its Mine 555 course, and iii) the Society for Participatory Research in Asia, located in New Delhi, India. The first, being the interactions between industry and communities, is where the problem is located; the second, the academic home for mining training, may be where opportunities for transformation can be explored; and the third, advocating participatory approaches, is a source for a solid foundation in community development.

2.1  Mining and Society

The International Council of Mining and Metals (ICMM) showed a concerning growth of mining-related community conflicts, when collecting data for a 10-year period: an escalation over 8 times since 2002 (Porter, 2014, p. 13). Canada is one of the largest mining nations in the world with two thirds of its mining assets being located abroad. For example, 55% of them are situated in Latin America (Natural Resources Canada, 2015) - as listed in Appendices I and II. Canadian industry is involved with a high number of mining-related community conflicts. Addressing these concerns via the education of future mining professionals is an important part of the solution.

Although mining can be the engine of an economy in several countries, it is important that the industry ensures that positive benefits overcome negative effects of the sector. Mining can provide a great source for tax contribution and employment opportunities in areas where no other industries are present. It can also bring infrastructure, social and economic development. However, throughout early exploration, feasibility, construction, and production to closure phases, there are significant impacts in the communities directly due to mining (Sumi & Thomsen, 2001, p. 11 to 17). Not all are positive. It is of upmost importance that the industry adopts frameworks and mechanisms to minimize adverse impacts and reduce the risk for mining-related community conflicts.
There is an expectation, from citizens to shareholders, that mineral exploration companies adopt a shared-value\(^1\) approach to maximize local impact towards integrated sustainable development and social well-being (World Economic Forum, 2014, p. 8). In addition, there is a demand for the sector to embrace and live by a triple bottom line framework, aligning financial accomplishment with environmental respect and contribution to social development (Porter, 2014, p. 3 & 13) (World Economic Forum, 2014, p. 2 & 4).

There are significant challenges in community development when the initiatives are generated by the need of a business, which is a common occurrence in an extractive setting such as mining. Several mining developments and operations are located in remote areas where populations in vulnerable circumstances live, provoking an imbalance of power between organizations and communities that can create a barrier and reduce or obliterate the voices of minorities (International Council on Mining & Metals, 2014, p. 20 & 36).

Some of the challenges faced by mining projects and operations in relation to community development and long-term plans are temporal. Although a few mines can have a life time of over 100 years, technology has been playing a role in diminishing the living time of a mine to a shorter existence. Mining is finite, its presence is temporary. Resources are non-renewable and mining commits to a business agenda with time restrictions (International Council on Mining & Metals, 2014). For instance, the average lifespan of a copper mine is between 5 and 70 years, though there are several examples of mines in operation for over 100 years (statista.com, 2017).

The social impacts triggered by mining may affect present and future generations; hence, the requirement of future needs is being addressed by present decisions. With little involvement from government, mining and communities usually find themselves on their own with the difficult task of transforming the short-term growth and opportunities into long-term development.

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\(^1\) The definition of shared-value is a management strategy focused on companies creating measurable business value by identifying and addressing social problems that intersect with their business (http://sharedvalue.org/about-shared-value).
One other complication is the reality of mining-related social conflicts affecting a large number of stakeholders - especially closely hosting communities. The origin of some conflicts can be linked to the lack of proper consultation and engagement, disagreements regarding acquisition or the use of land, and environmental concerns and social disruption related to the increase of in-migration provoked by the mining presence (The Fraser Institute, 2012). Although it is not a new problem, statistics show that mining-related social conflicts are increasing, causing social instability and becoming of greater importance to businesses (Davis & Francis, 2011); (Observatorio de Conflictos Mineros de América Latina, 2016, p. 15).

Mining companies have a tendency to support a paternalistic approach to community development (Klein, 2012, p. para. 7) and often attribute lack of inclusiveness and participation to community capacity deficiency (World Bank & IFC, 2002, p. 16). In order to avoid such an approach, organizations need to empower capacity building at an early stage of stakeholder engagement to allow community participation in development.

2.2 The Institute of Mining Engineering at UBC

The Mining Engineering Faculty was created when UBC opened. The Mining and Society course has been offered since 1999 and it is designed for graduate students to address social impacts in mining. The syllabus (Appendix III referenced on p. 10) presently addresses ethics, public perception, sustainable development, conflict resolution and responsible mining. In addition, there is a part of the course dedicated to communities, which aims to discuss approaches to engagement, consultation and capacity building. The goal of the course is to provide students and professionals, who may potentially be exposed to community development, with perspectives on social and environmental impacts of mining and strategies for corporate approaches that engage stakeholder participation on sustainable development.

This study aims to identify smart practices and theories that are effective and efficient in achieving sustainable development of communities surrounding mining operations, achieving a harmonious environment between mining and society, so that these concepts can be taught to students. This bridges academic education with real life experiences in engaging community
participation; embracing bottom-up approaches and organic growth; sharing learning processes and the search for systemic causes of sustainability failure.

The Mining and Society course fosters students’ participation through presentations and discussions from different perspectives. There is an opportunity to further enhance the dynamic content of the course with important elements to emphasize sustainability.

The options suggested for the Mining and Society course are outcomes of the primary results of this study and aim to ensure an improved syllabus with appropriate tools for multi-stakeholder participation. The author attended the course during the first quarter of 2017 as one of the 25 students in class. Most of the graduate students were from the Mining Engineering faculty seeking their Master’s degree. A minority were PhD students and/or from other programs including sociology, environmental studies and business.

The author also had the opportunity to share and explore ideas with fellow students and the instructor, and organized the final two classes of the course by inviting mining companies to present and discuss their challenges in liaising with their communities.

2.3 Mine 555

The Mine and Society course (Mine 555) is one of the graduate courses offered at the Mining Engineer Institute at UBC. Mine 555 aims to be a very dynamic course, focusing on ethics and pushing students to defend different perspectives by delving into distinct angles to exercise worldview approaches.

The course starts by exploring the differences between anthropocentrism (humankind as a central element to existence), technocentrism (valuing a system centered on technology and its ability to control and protect the environment), and ecocentrism (ecosphere and all living organisms as central, regardless of their perceived importance).

Positive and negative aspects of the three points of view are encouraged, taking into account different stakeholders viewpoints including those of communities, anti-mining organizations and mining professionals.
Ethics in mining is a large part of the course, exploring public perception, impacts on communities and the environment, conflict resolution, responsible mining and sustainable development. The course also walks around the holistic approach of converging economical, environmental and social objectives for community development.

### 2.4 PRIA – The Society for Participatory Research in Asia

In addition to attending the Mine 555 course, part of this research took place at the Society for Participatory Research in Asia (PRIA), located in New Delhi, India in November and December 2016. The intention of observing PRIA’s work was to have a different perspective of community development unrelated to mining and in another country. Talking to PRIA’s field team and visiting a few communities and projects developed by them helped the author to understand how stakeholder participation in planning and implementing can affect the sustainable development of communities. It also highlighted the importance of building capacity for both communities and the workforce, to enable participatory approaches.

PRIA is a global centre for participatory research and training, with a goal to empower traditionally excluded people through capacity building of community organizations, increase community participation in governance and to provide tools for capacity expansion. Established in 1982 as a global centre for participatory research and training, PRIA shares the UNESCO Chair in Community Based Research and Social Responsibility in Higher Education with the University of Victoria.

PRIA’s theory of change is about giving power to citizens, in particular the poor and marginalized, through information and mobilization, by making them aware of their rights and responsibilities. This research looked into the methodology applied by PRIA for strengthening local human and institutional capacities and the tools for capacity building, enhancing community engagement and participation.

PRIA’s strategy supports the understanding that every community operates as a complex adaptive system and explores awareness as a decisive step to increase the chances in achieving and sustaining outcomes. Complexity includes multiplicity, interdependence and diversity. It is
imperative to understand that impacts on similar conditions can provoke different outcomes, and small interferences can produce surprising impacts and unintended consequences. Complex systems are organic, and integrating different voices in the system increases the chances of success (Sargut & McGrath, 2011).

When working with different cultures and in unfamiliar places, collective understanding can optimize outcomes and make all the difference between achieving success and moving beyond failure. Participatory approaches can be a path for organizations to be inclusive and ensure the system contains enough diverse thinkers to deal with the changes and variations that inevitably occur.
3.0 Literature Review

This chapter examines the importance of education and awareness on sustainable development. It includes an appraisal on the principles and standards applied to mining and social/environmental responsibility, and an examination of governance and capacity building’s roles in community development.

3.1 Introduction

This literature review is an assessment of frameworks and approaches to detect key elements to support stakeholder relations and sustain community development in complex environments. It offers critical content to determine key elements particularly when compared to principles and standards the mining industry is expected to abide to.

Evaluating companies’ corporate social responsibility reports and evaluating their stories through challenges and achievements illustrated which fundamental ingredients should be the focus of the syllabus for the Mine 555 course.

To explore how to maximize the use of the key elements for educational purposes, a look into education for sustainable development unfolded in two important additions: capacity building and participatory approaches. Case studies, in chapter 5, were built based on the data compiled pertaining to community development projects employing policies, procedures, impact and risk assessments, and grievance mechanisms.

There is a vast amount of published work available on the subject of impacts and conflicts related to mining and local communities; however, there is less literature on the topic of systems to prompt community participation and its relevance on sustainability and minimization of mining-related conflicts.

Veiga, Scoble & McAllister (2001, p. 1) touch on the ultimate purpose of mining and communities: “to be considered as sustainable, a mining community needs to adhere to the principles of ecological sustainability, economic vitality and social equity”. Mining companies are
observing community sustainability and concluding that a genuinely collaborative approach with communities surrounding their facilities is more effective and valuable than adopting a framework that excludes external participation.

Key elements explored in this review are good governance, participatory methods, and how capacity building at individual, organizational and institutional levels, can become a door to a more democratic approach.

Another important mechanism investigated in this study is feedback systems and how they can be used as an instrument to engage with stakeholders and to create transformation towards a more holistic future. In addition to being a source for community development opportunities, feedback processes seem to be an invaluable tool for management systems improvement, working as a needs detector and pointing out tendencies and potential risks.

The power imbalance between communities and organizations demands the implementation of a strong feedback mechanism to support system interdependencies (Foster-Fishman, 2007).

3.2 International Principles and Standards for Mining

There is a complex set of regulatory frameworks that natural resources companies must comply with through the different phases of mining, from exploration, planning, developing and operation, through closure. This collection of policies ranges from federal and provincial requirements to international standards.

While many Canadian companies seek the assistance of the Mining Association of Canada (MAC) to help them in monitoring and adhering to such legislation (MAC, 2017), the major mining companies worldwide are also invited to join the International Council of Metal and Mines (ICMM); the junior sector relies on the Prospectors Development Association of Canada (PDAC); and companies ranging from junior to major seek finance through the International Finance Corporation (IFC). Here are some observations about these organizations:
• In 2004 MAC launched a program to express and ratify the commitment to responsible mining. This program is called Towards Sustainable Mining (TSM). The expectation is that MAC members can demonstrate their leadership by: engaging with communities, applying best practices on environmental stewardship, and committing to the health and safety of communities surrounding their operations and employees. Through a set of protocols and frameworks, MAC proposes an assessment criteria to evaluate their members performance ranging from grades C (showing inexistence of what is required) through, B, A, AA and AAA (excellent performance).

• The ICMM membership is earned by means of a meticulous admission process. Members commit to ten principles of good governance and capacity building (ICMM, 2003). ICMM is the peak of the industry’s organization and was established with the mission of enhancing the industry’s contribution to sustainable development. In 2005 ICMM together with the World Bank published a toolkit for Community Development, intended for use during a mining project cycle. The toolkit was reviewed in 2012, drawing upon ten frameworks and reports published after 2005 by the IFC and ICMM, five of which were related to human rights (ICMM, 2012).

• With more than 8000 members, PDAC organizes a yearly convention, which in 2017 reunited over 25000 people from 125 different countries. In addition to the Corporate Social Responsibility (CSR) event series during the convention, PDAC provides a web-based tool which comprise of principles and guidelines directed to exploration companies ² and supporting frameworks for community engagement.

• The IFC provides financing to develop deposits into mines and is a complementary organization of the World Bank Group which, according to IFC’s website, is owned by 184 countries. Their purpose it is to work with the private sector in developing countries to create opportunities. Their standards were designed to help their clients to enhance transparency, protect the environment and achieve greater development impact (IFC, 2015).

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² Exploration companies are also known as the junior sector, they are small businesses looking to find a mineral deposit and advance it through exploration. Their objective is to confirm the value of a deposit, and then, sell it to a larger company that will develop it into a mine.
Table 1 compares principles and frameworks applicable to mining companies. It shows they converge in supporting some important aspects of corporate social responsibility, community development and sustainability. Marked in color, the fields where certain standards have more room for improvement:

<table>
<thead>
<tr>
<th>Principles and Frameworks Supporting:</th>
<th>ICMM *3 (for major mining companies)</th>
<th>PDAC : E3-plus (for Junior Exploration)</th>
<th>IFC / World Bank / Equator Principles (for financing)</th>
<th>MAC: Towards Sustainable Mining</th>
</tr>
</thead>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Human Rights: Community Response/Grievance Mechanism</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Good Governance, Transparency, Anti-Corruption</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multi Stakeholder Partnerships</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Integration of Sustainable Development principles into policies and practices</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Capacity Building</td>
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<td>✓</td>
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<td>✓</td>
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<tr>
<td>Reporting and Transparency</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
</tr>
</tbody>
</table>

Table 1: Comparing principles and frameworks applicable to Mining companies

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3 * ICMM Principles have been benchmarked against leading international standards including: the Rio Declaration, the Global Reporting Initiative, the Global Compact, OECD Guidelines on Multinational Enterprises, World Bank Operational Guidelines, OECD Convention on Combating Bribery, ILO Conventions 98, 169, 176, and the Voluntary Principles on Security and Human Rights.
In 2008, Infomine, the world leader organization providing mining information, published a study comparing principles for responsible mining (Earthworks, 2008), aiming to advance efforts towards certification and verification. The investigation cited respect to human rights as one of the most shared principles, and contributions to sustainable development as a common expectation.

In 2011, the United Nations endorsed a set of global guiding principles for business and for participative feedback systems between organizations and local communities entitled “Implementing the UN's Protect, Respect and Remedy' Framework”. The reason for the endorsement was the need to protect, respect and provide remedy to those affected by a business: “States must protect; companies must respect; and those who are harmed must have redress” (Ruggie, 2013, p. xxi). The objective of the framework is to help companies to ensure they do not abuse human rights in the course of their business and that they offer reparation if breaches occur.

In 2012, the IFC included the above mentioned framework in its Performance Standards on Environmental and Social Sustainability. With that, they set an expectation for companies seeking project financing from them to demonstrate they are meeting minimum standards. The IFC also provides two important guidelines to assist developing a grievance mechanism: A Guide to Designing and Implementing Grievance Mechanisms for Developing Projects by the office of Compliance Advisor / Ombudsman, from 2008 (IFC, 2008); and Good Practice Note Addressing Grievance from Project-Affected Communities from 2009 (IFC, 2009).

3.2.1 The Global Reporting Initiative

A review of the Global Reporting Initiative (GRI) (Appendix IV) shapes the identification of the essential elements found in this study. GRI is an international independent standards organization that aims to help organizations to understand and communicate their impacts. GRI created the first global guideline for organizations to understand and communicate the impact of business on critical sustainability topics including community development, climate change, human rights, corruption and environmental issues. Conceived in 1995 to improve the quality of
sustainability reporting, in 2002 GRI was formally launched as the new global institution and collaborating center for the UN Environmental Program, and in 2016 GRI transitioned from a guideline level to a standard rank, being presently the most widely used standard for measuring and managing Environmental, Social and Corporate Governance risks.

One of the objectives set by the GRI is to be synchronized and uniform as much as possible with other internationally accepted standards. The creation of the GRI was informed by 135 different references (GRI, 2016, p. 237) including:

- Organization for Economic Co-operation and Development (OECD), OECD Guidelines for Multinational Enterprises, 2011;

The GRI is a reference for companies’ external reports on sustainability and corporate social responsibility. The GRI assessment informed the identification of the most essential elements to support and sustain community engagement and development, which are: principles, capacity and governance.

To test how GRI relates to negative community impacts produced by the presence of mining, Table 2 matches a sample of harmful consequences (“potential impacts”) to specific indicators\(^4\) - it does not include environmental and biodiversity impacts. A full review of GRI Standards Disclosures containing category, aspects and examples of indicators connected to the essential elements can be found on Appendix IV.

\[
\begin{array}{|c|c|c|}
\hline
\text{Example of Issue} & \text{Potential Impact} & \text{GRI Indicator} \\
\hline
\text{Demographic Change} & \text{In-and out-migration; increased prostitution and sexually transmitted diseases; economic, cultural and religious tensions between residents} & \text{SO2 - report operations with significant actual and potential negative impacts on local communities; MM9 - report where resettlements took place} \\
\hline
\end{array}
\]

\(^4\) some of the issues and impacts were informed by the assessment of issues and impacts tool from Anglo American toolbox (Anglo American, 2015, pp. 61-68)
<table>
<thead>
<tr>
<th>Example of Issue</th>
<th>Potential Impact</th>
<th>GRI Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>and migrant workers; breakdown in traditional values; relocation</td>
<td>and how livelihoods were affected</td>
<td></td>
</tr>
<tr>
<td>Social Nuisance Factors</td>
<td>Tensions between employees, contractors and local residents; disturbances such as rowdy behaviour; damage to land and property</td>
<td>SO11 – report grievances about impact on society</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>Safety hazards, increase road traffic and accidents; failure on security resulting in negative consequences such as human rights violations; increase in crime and disorder</td>
<td>SO11 – report grievances about impact on society&lt;br&gt;HR3 - report number of incidents of discrimination and corrective actions&lt;br&gt;HR12 - report grievances about Human Rights impacts</td>
</tr>
<tr>
<td>Bribery and Corruption</td>
<td>Employees and contractors may be faced with compromising ethical situations / decisions from time to time</td>
<td>SO4 – report communication and training on anti-corruption policies and procedures&lt;br&gt;SO5 – report confirmed incidents of corruption and actions taken</td>
</tr>
<tr>
<td>Lack of Local Support</td>
<td>Companies might choose to hire from outside the communities for convenience of finding skilled workers rather than investing on capacity building and training for workforce and suppliers</td>
<td>EC6 – report proportion of senior management hired from the local community&lt;br&gt;EC9 – report proportion of spending on local suppliers</td>
</tr>
<tr>
<td>Diversity and Equal Opportunities</td>
<td>Gender disparity is a well known fact in the industry</td>
<td>LA1 - report number and rates of new employee hires and turnover by age group, gender and region&lt;br&gt;LA12 report composition of governance bodies and breakdown per category according to gender, age group, minority group membership, and other indicators of diversity&lt;br&gt;LA13 report ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation</td>
</tr>
<tr>
<td>Stakeholder Engagement and Conflicts</td>
<td>Misinformation resulting in conflicts; lack of consultation, collaboration, involvement; an example would be the downsizing of workforce and the impact it might cause locally</td>
<td>G4-26 - report the organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group&lt;br&gt;G4-27 - report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns</td>
</tr>
</tbody>
</table>

Table 2: Community Impacts and Standards for External Reporting

Ford, one of the members of the Independent Expert Review Panel for ICMM, states that standards are the fundamental element for a corporate responsibility management system. He
illustrates that standards describe the “what” and “how” a business will face its material aspects (Ford, 2017).

### 3.3 Capacity Building

In 2009, the World Bank published a new approach to design, implement, monitor, manage and evaluate development programs: “The Capacity Development Results Framework” (Otoo, Agapitova, & Behrens). In this framework they give two essential definitions of capacity:

i. Capacity for Development: characterized as the availability of resources (human, financial, technical) and the efficiency and effectiveness which they are deployed to identify and pursue development on a sustainable basis - aiming results and performance to be locally owned, reproduced and expanded by local actors; and

ii. Capacity Development: defined as a locally driven process to enhance local ownership by creating and empowering leaders and other agents of change to achieve development goals.

In addition to these definitions, the term "community capacity building" is often referred to in the programs of most international organizations that work in development. Capacity building is usually identified as a process for individuals and organizations to develop and strength resources and skills in order to complete a task with competence.

Figure 1 is from a report on capacity building prepared for the European Union (Floridi, Sanz-Corella, & Verdecchia, 2009), and illustrates the capacity building dimensions. The systemic capacity building model is based on three levels: building individual capacity, strengthening the organizational level, and enhancing the level of institutional support. The basic principles of capacity building include building on what already exists and the participation of persons or organizations involved:
In her literature review, Verity discusses the benefits of community capacity building. She suggests that when there is community participation, individuals and groups are given power and voices, and have their skills, awareness, and confidence enhanced. In addition, connections and relationships are boosted, provoking an increase on the acceptance of programs at the same time that response and accountability of decision makers are intensified (Verity, 2007).

Figure 2 lists action areas where community capacity can be built upon:

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5 From Community Capacity Building – a review of the literature (Verity, 2007)
In the mining context, it is fundamental to use a combination of approaches that promotes capacity building for stakeholders to become the owners and managers of their growth. That can be achieved by escalating levels of engagement going from informing, consulting, involving and collaborating with community members, to empowering them and ultimately placing on their hands the authority for final decision-making (Anglo American, 2015, p. 45).

3.4 Good Governance

Governance is simply defined as the process to make sound decisions and implement them. Figure 3 is a description from the United Nations of characteristics of good governance (United Nations, 2016):

![Figure 3: Characteristics of good governance (from UNDP, 2016)](image)

Good governance is a critical success factor for sustainable development. It is a desired condition that is challenging to be achieved consistently. It encompasses informed and organized participation within a fair framework (rule of law). The aim is to provide accessible information (transparency) in a clear and reasonable timeframe (responsiveness). The expectation is that good governance will lead to a mediation of different interests towards a broad and long-term perspective that finally results in sustainable development (consensus).
Doing the right thing and doing things right are also premises of meeting the needs of society as a way to protect (being effective) and make the best use of resources (being efficient). Being inclusive allows the most vulnerable people to have a voice and ensure they are offered opportunities to fully participate. Accountability (accepting responsibility) is a key condition for good governance and can only exist if there is transparency and the rule of law (United Nations, 2016).

Graham and Mitchell (2009) explore the significance of transparency, accountability and participation in good governance, while participation and decision making is one of the highlights mentioned on the Five Pillars for Effective Governance (Centre for First Nations Governance, 2016). Still on governance, Ellis Carter (2009) puts forward a list of mistakes that reflects inappropriate practices, in general, due to lack of proper knowledge or diligent research.

For convoluted systems in complex environments, inclusiveness can be achieved through capacity building and a leadership approach towards facilitating reflection. Multi-stakeholder approaches are recommendation of good governance and can provide different perspectives to develop new responses to old problems (Meadows, 1999).

Metrics is another component of good governance that works as a foundation to supporting processes. To measure how much and where a project is successful, one needs to establish key performance indicators (KPIs). Thiry (2002, p. 226) recommends a few basic rules for implementing KPIs:

- Quantify metrics so that you can measure;
- Ensure metrics are feasible in terms of cost, time and resources requirements;
- Choose meaningful indicators to reflect accuracy and relevance;
- Include considerations to identify changes over time; and
- Take account of timeliness to help decision-makers consider project effectiveness.

Performance reporting will be enhanced if expectations and details of the plan are clear regarding objectives, budget, schedule, scope, outcomes and benefits strategy.
Good governance in mining must consider that most mining operations take place in remote areas where there might be lack of government support and poor infrastructure. It must also recognize the reality that its presence and activities may affect vulnerable groups.

To help improve the chances of achieving success in community development, some of the key elements to sustain development in complex environments applied by PRIA (Participatory Research in Asia, 2017) focus on good governance and capacity building, aiming to empower participatory approaches include:

- Building trust by providing an inclusive environment so that people feel comfortable and safe in participating;
- Ensuring views from different perspectives including the voices of children, the elderly, men, women and vulnerable groups that can affect or be affected by the implementation of a project;
- Managing community expectations in order to control risks and minimize the chances of project failure;
- Setting objectives that allow participants to employ their knowledge as an enticement to motivate participation;
- Identifying and prioritizing issues that are important to communities as an evidence that they matter;
- Capacity building by means of enhancing community’s ability to propose, request, demand, give feedback, implement, plan, participate, discuss (soft skills + technical skills);
- Acting on different levels of competency:
  - individual: capacity of setting and achieving objectives;
  - organizational: resources, network, management;
  - environmental: creating conditions: political, social, economical, cultural; and
- Establishing a multi-stakeholder approach to help:
  - sharing responsibility and accountability,
- integrating and connecting resources, facilities and programs already available by other organizations,
- strengthening leadership and local government capacities

The process in Figure 4 aims to represent strategic planning steps for a program to achieve sustainable development in complex environments, based on PRIA’s Theory of change (Participatory Research in Asia, 2017):

![Diagram](image.png)

**Figure 4: Proposed Strategic Process**

### 3.4.1 Participatory Approaches

Because unpredictability is a common element in complex environments, flexibility is a requirement for success in the proposed strategic process. Identifying the frame in which a community is functioning, can help a project to create a receptive approach to a community-wide vision, build trust, develop collaboration and establish priorities to support sustainability.

Due to its potential to address complex social problems, Comprehensive Community Initiatives (CCIs) are a perfect match for the needs presented by complex environments as they aim to transform convoluted social issues such as poverty, malnutrition, health and education deficiencies. CCIs aim to transform multiple views into common objectives towards long-term results by way of a multisectorial and participatory engagement.

One fundamental element for a CCI is to set strong governance standards which can be achieved through a multi-stakeholder steering committee. CCIs take into consideration the
complicated environments where the communities are set; offering a transformation to complex systems through inclusive and informed decisions, changing the way a community makes choices and decisions (ccitoolsforfeds.org, 2016).

What distinguishes CCIs from other initiatives and efforts is the comprehensive magnitude and methodology without assumptions. CCIs adopt an expanded reach and, consequently, address a series of matters with a holistic and long-term oriented view.

CCIs embrace inclusive and multisectorial approach, motivating working together by giving voice to particular groups with similar interests or characteristics. They also empower capacity building through initiatives that will irrevocably lead action with intention and purpose (Gardner, 2011); (Torjman & Leviten-Reid, 2003).

3.5 Education for Sustainable Development

In 1997, UNESCO presented at the International Conference on Environment and Society and highlighted the relevance of education and awareness for the progress of sustainability. The document urged the need for education to be reoriented in order to support sustainability. Notably, it called for a multi-stakeholder collaborative work towards a holistic and integrated consideration of social, economic and environmental aspects. Education for Sustainability requires a review of the curricula in the direction of assessing processes that would drive society to reinforce and build a more sustainable future (UNESCO, 1997, p. para 57 to 68). UNESCO has been globally recognized as the lead agency for Education for Sustainable Development, whose purpose is to create more resilient and sustainable societies (UNESCO, 2017).

One of the milestones recognized by the Sustainable Development Knowledge Platform, from the Department of Economics and Social Affairs of the United Nations (UN), is the creation of the Higher Education Sustainability Initiative (HESI), which took place right after the Rio+20 – the UN Conference on Sustainable Development in 2012. The objective of HESI is to stimulate higher education institutions to commit, teach and encourage research related to sustainable
development (Sustainable Development Knowledge Platform, 2017). At present, over 300 universities worldwide are members of HESI.

In 2015 the government of Canada published a toolkit to provide mining companies working abroad with a Corporate Social Responsibility (CSR) checklist. The checklist was developed in a collaborative effort of the Mining Association of Canada (MAC) and the Prospectors Development Association of Canada (PDAC), two recognized and popular sources of guidance for mineral exploration companies. The toolkit covers an initial assessment and issues such as health, safety and security, in-migration (related to the presence of Mining), environmental and social impacts, and community relations.

Figure 5 (Natural Resources Canada, 2015) shows the project life cycle of a mine deposit from initial exploration to the completion of an operation. The figure shows that a timeline can go over a 100 years and note the vital reality that the post closure impacts are perpetual.

![Figure 5: Project Life Cycle](image)

Figure 6 (Natural Resources Canada, 2015) describes the issues to be discussed between industry and communities during the different phases of mining. It is interesting to notice that
although some of the matters are temporary, others such as environmental issues and community relations are ongoing processes that are triggered from the first steps a company takes.

![Community Issues Diagram]

Understanding of figures 5 and 6 is also a necessary feature of any educational strategy. Knowledge and awareness are preconditions for capacity building to embrace varied stakeholders (employees, communities and government) and might need to consider appropriate language to different audiences.

While there are positive initiatives to empower sustainability education, the industry’s corporate social responsibility reports still point to a direction where only few companies have the courage to share their challenges candidly. The industry seems to have a partial tendency to look at the positive aspects of social impacts and conflicts, while minimizing the negative aspects. The motivation might be the perception of competitive advantage in not disclosing challenges. On other explanation could be the fear of judgement harming stakeholders’ confidence and future strategies.
3.5.1 Graduate and University Courses in Mining and Social Issues

Veiga et al. discuss the challenges of the curriculums on most engineering schools being focused on technical perspectives, leaving the education on social impacts as of secondary significance. This limits the student’s capacities to develop a more holistic view on the consequences of mining presence in local communities and vulnerable populations (Veiga, Nichols, & Holuszko, 2015, p. 210).

In addition to UBC Mine 555, the following courses content were reviewed on (Appendix X: Graduate and University Courses in Mining and Social Issues), with the objective of assessing whether the programs were parallel: Resources and Sustainability from Queens University; Sustainability, Corporate Social Responsibility and Indigenous Awareness, from the British Columbia Institute of Technology (BCIT); and, Environmental Activism and Canadian Extractive Industry, from the University of Toronto. The courses were an elective option for graduate students, except for the BCIT course that was part of an undergraduate program.

While these courses can undoubtedly help in building an education towards sustainability, the element that can generate an impact on students is an exposure to real life situations expressed in case studies. This can also be achieved by professionals and stakeholders sharing their experiences in classes. Transparency in these discussions of challenges and mistakes may contribute the most to student learning.

In order to attract professionals to contribute and communicate their challenges with openness, it is necessary to create a safe environment where there is no fear of transparency. An interesting proposal that could be use as a model is the Devonshire Initiative, a forum with the mission of inspiring the mining industry, international development organizations and government to collaborate and have open discussions, tackling challenges and opportunities. Their strategy is the use of the “Chatham House Rules” to facilitate free speech and confidentiality, as participants are free to share information without identifying the speaker or its affiliation outside of the group (The Devonshire Initiative, 2017).
The level of attention given to social impact and the roles communities can play in the future of a mining operation does not seem to be of much concern in the programs of mining engineering faculties, as they choose to concentrate on technical subjects (Veiga, Scoble, & McAllister, 2001).

This is further illustrated in Figure 7, from Ernst and Young, which shows their interpretation of business risk for mining and metals, placing *social license to operate* \(^6\) as the 4\(^{th}\) major concern in posing challenges to the industry.

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\(^6\) The *social license to operate* (SLO) refers to the level of acceptance or approval by local communities and stakeholders of mining companies and their operations ([http://www.miningfacts.org/Communities/What-is-the-social-licence-to-operate/](http://www.miningfacts.org/Communities/What-is-the-social-licence-to-operate/)).
3.6 Summary

Governance is defined as the process to make decisions and implement them, and as the way an organization is controlled by the people who run it (Merriam Webster, 2017). Good Governance includes certain characteristics that governance itself will not necessarily embrace, such as transparency, inclusiveness and organized participation. Good governance is considered to be the most fundamental factor to achieve sustainability.

In order for an organization to achieve sustainability in its efforts towards community development, and to be effective and efficient, principles need to be developed into standards and implemented through good governance. With these crucial basics a strong system can be put in action and then human capital fulfill the tasks and deliver an expected performance. This can only be possible if capacity is ensured.

Universities seem to concentrate their educational efforts to converge their programs towards principles and good governance, but little attention to capacity building; their components seem to congregate to a combination of principles and good governance that can only be achieved by the existence of capacity.

One vital component to achieve a realistic level of education for new professionals, pertinent for the Mine 555 course, is the industry responsibility in sharing their experiences with transparency. If industry professionals hide behind their mistakes and choose to market only their good deeds instead of communicating challenges and discussing alternatives, no lessons learned can be taken to improve existing practices. The workforce of the future will certainly welcome an opportunity to prepare for greater organizational readiness and fluid relationships.

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7 One of the definitions of principle is the vital proposition to serve as the foundation for a system (Oxford Dictionaries, 2017). A principle provides guidance for the application or the interpretation of standards, while standards offer the framework to resolve an issue (Legal Theory Blog, 2017).
4.0 Methodology

4.1 Methodology and Methods

A methodology for this research is influenced by Arksey and O’Malley’s proposal of a scoping study as a tool to map applicable literature to summarize findings (Arksey & O’Malley, 2005, pp. 3, 5 & 6). One of the advantages of scoping studies is their suitability to map evidence-based key concepts, especially in complex areas (Mays, Roberts, & Popay, 2001).

The tables in this study along with Appendix IV: GRI Standards Analysis attempt to use the scoping study technique as a mechanism to condense findings and apply a conceptual analysis by coding the data, suggesting the discovery of the essential elements of this study (Antman, Lau, Kupeinick, Masteller, & Chalmers, 1992, p. 268).

The research methodology includes a comparative analysis of: standards and framework accepted as international best practices by the mining industry, a proportional general overview of courses equivalent to the Mine 555 module, a series of case studies on community development and mining, and observations of community development in action in non-mining contexts in India. The expectation is that these analysis will fit together to achieve the research objectives by intertwining principles’ visions and missions with actual governance, identifying gaps that need fulfilling.

The assessment for the ideal syllabus for the Mine 555 course content is conducted to investigate how educational efforts can be linked to social requirements (Kaufman & Stakenas, 1981). The objective is to determine the essential elements that inform community engagement and development and ensure they are well addressed in the Mine 555 program.

The research methods used in this study include qualitative approaches by means of observations and document analysis to explore whether multi-stakeholder collaboration and cooperation contribute to the sustainable development of local communities surrounding mining operations.
The following case studies are designed to test the proposed essential elements applied in real-life situations, and suggest how principles, good governance and capacity building are successfully put into operation to support engagement and development of communities:

- **Case Study One**: an illustration of resettlement considered a model for achieving Free, Prior and Informed Consent (FPIC)\(^8\) pointing to the importance of principles;

- **Case Study Two**: an example with mining closure alternatives proposing a strategy of leveraging collective skills, supporting multi-stakeholder approaches and investing in capacity building at individual, organizational and institutional levels as a mean to strength the sustainable development of a community affected by mine closure;

- **Case Study Three**: a scenario where children in India are involved in identifying safety locations to start a discussion for gender streamline solutions. This case expresses the inclusion strategy applied by The Society for Participatory Research in Asia;

- **Case Study Four**: a case of participatory approach suggesting communities taking charge of their future and building an independent relationship with a mine; and

- **Case Study Five**: two examples of grievance mechanisms outlining their advantages.

This research includes investigation of successful and unsuccessful community development initiatives in order to investigate lessons learned. Community development projects unrelated to mining were observed during the field trips taken with PRIA in India. Community development projects sourced from mining were drawn from public domain material and publications.

Active Learning was observed during the field trips with PRIA aligns with constructivism in its requirements for participation with purpose, reflection and engagement, merging reflection and action as a collaborative process (Bonwell, 1991). The methodology generates ideas

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\(^8\) Free prior and informed consent (FPIC), is the principle that a community has the right to give or withhold its consent to proposed projects that may affect the lands they customarily own, occupy or otherwise use (http://www.forestpeoples.org/guiding-principles/free-prior-and-informed-consent-fpic).
through a system thinking disciplined approach and to demonstrate understanding of facts and ideas by organizing, comparing, interpreting and describing main ideas. The definition for system thinking adopted by this framework is the one presented by Arnold and Wade (2015, p. 675), which identifies its objective as working towards “understanding systems, predicting behaviors, and devising modifications in order to produce desired effects”.

Secondary data collection includes literature searches for guidelines from industry and international organizations including The United Nations, World Bank, Mining Association of Canada, ICMM and the Global Reporting Initiative. Statistics from the Department of Natural Resources Canada, Mining Association of Canada, ICMM and PRIA, among others, are also examined. Searches are undertaken by online platforms in Portuguese, Spanish and English to inspect books, journals, government reports, sector reports, and articles, using some of the following terms: education for sustainability, community engagement, development and conflicts combined with mining.

4.2 Conceptual Framework and Theory of Change

The main concepts that give direction to this project are grounded in critical system thinking based on stakeholder ownership and understanding of systemic change process, and a flexible approach to the theory of change as a tool to mapping out a plan to lead to desired long-term goals.

Theory of change application has been effectively used in international development when the approaches accommodate uncertainty and flexibility and it can help to identify and deal with complexities (Vogel, 2012). The strategy for a project developed through a multi-stakeholder approach includes exploring the ownership of problem-solving process and the importance of culture and context in understanding (Derry, 1999), with a look into constructivism and social constructivism, in forms of adult education, mutual planning and cooperation.
A tentative conceptual framework is suggested to map out how highlighting the three elements – principles, capacity building and good governance - in the Mine 555 program could affect change in learning for future professionals. A theory of change reflecting such impact is based on the model proposed by the United Nations Development Program (United Nations, 2009) and is shown in Appendix VI.

Tables included in this study apply framework analysis through the stages of familiarization, identifying a thematic framework, indexing, charting (using both thematic and case charts), mapping and interpretation (Lacey & Luff, 2009, p. 13 & 14).

### 4.3 Limitations, Strengths and Risks

This research is exploratory and the focus is limited to understanding the essential elements that sustain community engagement and development within the complex sphere of the mining industry, and how to maximize these elements for educational purpose. Case studies may not be representative of other situations.
5.0 Findings

The principal source for the findings is linked to some patterns identified both at PRIA and from mining companies’ case studies. An analysis of different principles and standards, and especially, the Global Reporting Initiative (GRI) served to confirm the presence of the essential elements. GRI is an international independent standards organization that aims to help organizations to understand and communicate their impacts. GRI is portrayed in more detail in chapter 6.

The findings lead to three fundamental components: Principles, Capacity and Good Governance:

5.1 Principles

It is interesting to note the collaboration among the different principles and frameworks applicable to the mining industry. Whether they worked together or benchmarked themselves against previous initiatives, the guidelines seem to lead towards good governance and capacity building (Table 1).

Mineral Exploration companies face a range of challenges when working in communities and should consider full implementation of a human rights policy across its operations. An essential element to achieve a successful implementation is working closely with sites and local stakeholders to understand the current practices and procedures in place.

The key management elements to demonstrate respect of human rights (recommended by industry standards and guidance – ICMM) include the following: policy commitment, internal integration, due diligence, impact and risk assessments, stakeholder engagement, training (capacity building), grievance mechanism, remedy, monitoring and reporting, legal compliance, FPIC, supply chain and security.

Case study one aims to portray the use of these fundamental concepts:
CASE STUDY ONE: RESETTLEMENT AND PRINCIPLES

First Quantum Minerals is a mining company with assets in nine different countries. One of them is Cobre Panama, a large open-pit copper development project in Panama. When the plans to develop a mine were initiated ten years ago, the impact study estimated the need to resettle over 600 people living in the area, about 65% of them being indigenous people who had moved into the area in the early 2000s.

Cobre Panama was one of the first organizations to start a relocation process since the UN’s adoption of the Guiding Principles on Business and Human Rights (United Nations, 2011). Its performance shaped a model for achieving Free, Prior and Informed Consent (FPIC) in Latin American (Fasken Martineau, 2017).

The heart of the plan, said to be a highly collaborative effort, was the design of a consultation process that adhered to the highest global standards and principles including the above mentioned UN in addition to the IFC Involuntary Resettlement guideline (Involuntary Resettlement Guideline, 2012) and the International Labor Organization (ILO C-169, 1989), the Indigenous and Tribal Peoples Convention. The process engaged and included stakeholders including the local residents, government, NGOs, indigenous rights experts and resettlement specialists.

The resettlement plan was completed earlier this year and lessons learned emerged in five key areas:

- **Respect** for culture and tradition informed the strategy, for example, new houses were designed considering that indigenous groups in the area do not cook nor do their necessities inside their homes;

- **Education** was imperative in the process as stakeholders needed to understand their rights in taking certain decisions, for example, for the consultation process it was agreed that both men and women from every household would have the right to one vote each;
• **Fairness**, when a group of newcomers tried to be inserted in the resettlement agreement years after it was signed, the company was able to count on the support of the local community leaders to uphold the original terms of the agreement;

• **Transparency** prevented misunderstanding in the circulation of documented conversations and meetings to different stakeholder groups;

• Responsible resettlement is a **continual** process which may take months or years for the communities to adjust to their new reality. The company assumed the responsibility to keep addressing concerns and keep helping people to adapt and build a better future.

Despite the many challenges the company faced, they attributed building a relationship of trust with the community to be the successful factor in completing the resettlement effectively.

It is evident that principles played a crucial role for First Quantum to thrive with their resettlement implementation. It is also clear that principles demand flexible working practices to accommodate cultural differences. For example, the fact that the indigenous communities were given the power to define what they would consider as free, prior and informed consent was vital to the fairness of the process.

Key elements gathered from PRIA were present in the First Quantum approach, for example, their efforts in building trust with the community by providing an environment where participants could feel comfortable and safe to participate. Another illustration is the fact that First Quantum identified and prioritized issues that were important to the community –per the example of building cooking facilities and bathrooms outside their houses.

**5.2 Capacity**

Of the three key essential elements, capacity is likely the most important one. In the circumstance where community development is taking place because of the presence of mining in complex environments, governance cannot be properly established without capacity, and principles cannot be implemented without governance.
Before organizations offer to build capacities for communities they need to ensure their workforce has enough competence to do so. The challenge for the mining industry is that their technical professionals will likely be liaising with community members who may not possess corresponding leadership and communication skills. Knowledge of conflict resolutions can be a relevant aptitude to transform relationships.

A major challenge for mining companies (and the highest source of opportunities for hosting communities), is finding a skilled workforce. Once the mine is built, the number of personnel dramatically reduces and the mine might only need to retain 500 or less people, even though during construction, the required labor force might be 10 to 20 times such amount. The same applies to the need of services and supplies which can also be a source for local economy.

Table 3 is an example of some opportunities and challenges mining industry may find in creating and enhancing community capacity for their hosting communities:

<table>
<thead>
<tr>
<th>Area</th>
<th>Opportunities</th>
<th>Challenges to be Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Procurement</td>
<td>· Identify opportunities&lt;br&gt;· Develop strategy&lt;br&gt;· Build required supplier capacity and enhance competitiveness&lt;br&gt;· Strengthen local economy by supporting entrepreneurship</td>
<td>· Develop inclusive opportunities&lt;br&gt;· Stimulate good governance and partnerships&lt;br&gt;· Provide access to finance and training&lt;br&gt;· Demand variations during different phases of mining</td>
</tr>
<tr>
<td>Local Workforce</td>
<td>· Identify employment opportunities for skilled and non-skilled workforce and build capacity (vocational skills, small business development)&lt;br&gt;· Prepare local workforce development plan</td>
<td>· Understand local market and training institutions&lt;br&gt;· Align contractors&lt;br&gt;· Demand variations during different phases of mining&lt;br&gt;· Immediate needs such as Health, Safety and Environment programs&lt;br&gt;· Training is not a guarantee of employment</td>
</tr>
<tr>
<td>Local Infrastructure Development</td>
<td>· Potential source for local jobs, services and suppliers&lt;br&gt;· Design and implement new infrastructures with consultation&lt;br&gt;· Local benefits on new infrastructures (roads, electricity, telecommunication, education, recreation, etc)&lt;br&gt;· Partner with local/regional development plans</td>
<td>· Management of risks&lt;br&gt;· Safety for the general public to use&lt;br&gt;· Ensuring the long-term sustainability</td>
</tr>
</tbody>
</table>
### Table 3: Opportunities and Challenges for Community Development within Mining

<table>
<thead>
<tr>
<th>Area</th>
<th>Opportunities</th>
<th>Challenges to be Addressed</th>
</tr>
</thead>
</table>
| Local Institutional Capacity Development  | · Participation of public in public processes and decisions that affect their lives  
                                           | · Partnerships (community-based organizations, NGOs and governmental institutions) | · Effective information and accountability  
                                           |                                                                                     | · Appropriate monitoring |
| Developing Alternative Livelihoods        | · Capacity of stakeholders to take ownership  
                                           | · Identify value chain and potential opportunities for development  
                                           | · Exploring existing economic sectors                                          | · Willingness of stakeholders to take ownership  
                                           |                                                                                     | · Understand and address constraints (training and capacity building)  
                                           |                                                                                     | · Mobility of people in the local area (migrant labour) |

Case Study Two provides an example of a mining company offering training not only for individual competence but also for community organizational and institutional strength:

**CASE STUDY TWO: CREATING CAPACITY AND INDEPENDENCE**

With a population of about 4000 inhabitants, Cerro San Pedro is a municipality in Mexico with a long history of mining that includes Minera San Xavier (MSX), one of the five mines operated by New Gold. After nine years of production, MSX started a closure process in 2015, when the company began a series of workforce reductions affecting over 500 employees and contractors as part of the gradual implementation of shutting down of the mine. In an effort to minimize negative impacts the company concentrated its efforts in building capacity in the community and establishing a multi-stakeholder approach to explore alternative opportunities that would not be dependent on mining.

In addition to outplacement plans offered, other initiatives included training programs and workshops developed by local public and private institutions to develop opportunities in agriculture, tourism, services and commerce. One example of these partnerships was the one

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9 Based on Anglo American Social Economic Assessment Toolbox, (Anglo American, 2015, pp. 163-199)
with the Monterrey Institute of Technology and Higher Education, designed to develop entrepreneurship, creativity, innovation and business education.

More than just enhancing individual capacity building, the company put efforts in leveraging collective skills, promoting multi-stakeholder approaches and reinforcing organization and institutional competence for the communities, so that when the mine is no longer operating the community can still benefit from their past presence (New Gold, 2016).

In addition to provide community capacity building, the New Gold example shows efforts in exploring existing networks and resources, which supports the strengthening of community independency from mining.

### 5.3 Good Governance

Complexity demands flexibility in both leadership and strategic planning (Organizational Research Services, 2004). Every community needs its own road map and a theory of change. A strategic plan based on good governance must have enough attention devoted to community participation in shaping the way to the wanted results.

While Burnes (2005) examines the magnitude of bottom-up approaches and flexible cultures (Culture-Excellence) to uphold authenticity within a complex adaptive system, Hurst discusses the common characteristics of complex systems, describing the perpetual novelty and the dissolved control generated by the existence of multiple agents in both cases (1994, p. 342).

With gender disparity less pronounced in other industries, mining shows relatively little concern in changing their gender disproportion – a lack of inclusion illustrating poor governance. The industry has fewer women on boards of directors when compared to any other major industry\(^{10}\). In addition, a national labor market report from 2016 shows women accounted for only 17 per cent of the Canadian mining workforce – a shy increase from the 14 per cent recorded 10 years before (Gauen & Hughes, 2016).

\(^{10}\) [http://www.globalminingstandards.org/women-mining-steps-strategies-best-practices-gender-diversity/]
One promising proposal for inclusion and diversity is from BHP Billiton, the largest mining company in the world with over 65,000 employees, which announced in 2016 their aspiration for achieving gender balance by 2025. This is a bold target for a company that had only 16% of women in their workforce by the time they published this declaration (BHP Billiton, 2016).

An example of a more modest initiative is from Hudbay Minerals: In 2013, as a consequence of their inclusion program, they saw a significant increase in the number of local businesses managed by women. In an area where women did not work by tradition, they recorded that 23% of women were part of the workforce, including in the management of small businesses (Hudbay Minerals, 2013).

A remarkable illustration to increase gender participation can be seen in one of the PRIA’s project as described in the case study three:

CASE STUDY THREE: INCLUSION AND GENDER STREAMLINE

During a visit to one of the communities in Delhi, India, a group of 27 girls shared their stories and showed how they learned with PRIA to map the places where they most felt safe and unsafe. They also explained how the mapping progressed from a simple exercise into getting the authorities to take measures.
In the above photo, girls are pointing out the results of mapping their neighborhood: by placing happy, sad or neutral emoticons – a pictorial representation of a facial expression – on the map. They were able to indicate the places in their community where they felt safe and those where they were afraid of going to. Girls felt unsafe in spaces where boys were present.

With this information in hand, PRIA invited boys to be part of the conversation and explore why girls felt that way and which alternatives could be explored to transform this issue – an admirable example of inclusion. Boys and girls conferred about the matter and the choices to make a safer environment for girls. Their thoughts were then shared with authorities that were able to shape the necessary changes.

In a different community in the south of Delhi, another gender streamline effort was witnessed. Women from traditional castes found out through PRIA that they could make a difference, participate and have a voice. They told researchers their stories and how they had to convince their husbands and mothers-in-law through information and awareness, so that they could exercise their power and eagerness to make a change. Today, many of those women are employed by PRIA as instructors for different workshops while others were able to launch successful business and gain the pleasure of having a voice.

The hopes that India would be a good source for this study was due to its intricacy motivated by the diversity and the need for inclusion. Throughout five weeks of exposure to a rich and dissimilar culture, the author found hope that one can thrive in chaos and find strength in community.

India is a country with complex contradictions, where there are more people with access to a cellular phone than to a toilet. On the other hand, with such a cultural, religious and linguistic diversity, India’s attributes of multiplicity and pluralism is a proof that tolerance and respect are what it takes to move towards unity. The quest for the most essential elements to support sustainable development in complex environments was reached: the guiding principles, capacity building and good governance, directing sustainable development with sense and sensibility, inclusion and community participation.
Moving to collaborative efforts as part of good governance, initiatives to address complicated issues are often challenged by the failing to view communities as a complex system. They seem to focus on the problem rather than concentrating on creating conditions and improving a system to be capable of providing sustainable solutions. A community affected by hunger, for instance, needs food as an immediate solution. More than that, communities need to identify lever points in their systems that will help them to self-sustain themselves in the long-term.

To create an effective change in the status quo and provoke an impact that increases values to communities, it is necessary to identify levers (Foster-Fishman, 2007) by means of frameworks and tools that will create proper conditions for changes to take place in the present environment. In 1997 Meadows proposed nine places in a system where a small alteration can create a major impact in complex systems and expanded the list to twelve leverage points where a small intervention can transform a result with positive major impacts (Meadows, 1999).

The identification of leverage points is an opportunity to address long-term impacts and provide short-term opportunities with a small shift. For that to take place, it is necessary to identify the right time and proper circumstances to intervene, and then to create conditions for the change to happen. The following case study is a good example of using leverage to cause a positive impact and the influence of participatory approaches in sustainable development:

**CASE STUDY FOUR: GOOD GOVERNANCE AND COMMUNITY PARTICIPATION**

In 2012 Hudbay Minerals introduced a new concept in the three districts impacted by their Constancia Mine in Peru: the Sustainable Development Table, an initiative that not only would expand capacity building but would also promote good governance and multi-stakeholder approaches. The concept was to facilitate collaboration among local, district, regional and national levels of the government. The objective was to cooperatively develop solutions to issues such as extreme poverty and malnutrition by improving the quality of health and education (Hudbay, 2013, p. 29).
In 2013, together with their communities of interest, they started the multisectorial committee for development (MCD). During that year they held 99 meetings responsible for the creation of 68 projects, 72 local companies to provide services and equipment to the mine, and 15 alliance agreements.

Focusing on building community abilities, the MCDs kept creating new partnerships with government, universities, private organizations and NGOs. One of them was the Global Indigenous Development Trust North/South exchange program for local community leaders from a Peruvian province to see Canadian best practices in mining and agriculture. The participants took part in workshops and hands-on training in Timmins (an Ontario mining community), visited farms, and met with municipal, government and community leaders in Toronto (Hudbay, 2015).

Some of the project modules comprised of providing community capacity building and technical assistance in areas such as governance, business organization and leadership. Another important element was to create aptitudes for communities to build strategic partnerships with the public and private sector for equitable community participation. By exchanging experiences and sharing challenges with Canadian Aboriginal leaders, they expanded their views on how to minimize risks and leverage opportunities to create lasting development opportunities to achieve communities’ goals bearing in mind their cultural beliefs and respecting their social and environmental stewardship (Global Indigenous Trust, 2017).

Hudbay’s case above is an example of how good governance and multi-stakeholder approaches focused on building capacity and partnerships can empower communities to drive their own development. PRIA’s model can be recognized in this example where Hudbay shows inclusiveness with a participatory approach focused on community capacity building.

When working with different cultures and at unfamiliar places, collective understanding can optimize outcomes and establish the difference between achieving success and allowing failure. Leaders can easily get tricked into thinking they know what people need and how the help should be delivered, falling into traps of authoritarian and patronizing approaches (Sirolli, 2012).
Several needs of system regulations and awareness can be detected through a grievance process, which is an important element of good governance. The grievance mechanism (also called feedback system or community response mechanism) is intended to be a conduit for reducing conflicts and to find a remedy. It is effective if there is shared awareness of the process. Additionally, it is critical that there is trust in the process and that the users have capacity to utilize it. Here are some of the expectations of the grievance mechanism set by the UN (United Nations, 2011):

- Legitimate and Engaging: the system must be reliable otherwise stakeholders are unlikely to use it. Collaboration among company and stakeholders can enhance a shared interest and ensure needs are met;
- Accessible: facilitate availability and accessibility to the system in order for concerns and complaints be easily captured;
- Predictable: the system needs a structure that clearly sets reasonable expectations of time for each response and progress from beginning to end;
- Equitable: the system needs to be perceived as fair and impartial due to the imbalance of power and access to resources between the company and the affected parties –this is achievable with the engagement of the stakeholders in the design of the process; and
- Transparent: communication with the affected parties must take place regularly.

Figure 8 reflects the grievance mechanism adopted by Hudbay Minerals in 2013:
Case study five reflects on impacts with and without grievance mechanisms experienced by two mining companies:

### CASE STUDY FIVE: GRIEVANCE MECHANISMS

In their Socio-Economical Assessment Toolbox, Anglo American, a major mining company quoted their experience with the implementation of a complaints and grievance procedure. In March 2009 they implemented a pilot project at their Cerrejon site in Colombia; during the pilot, they conducted a gap analysis against the UN Guiding Principles and established the terms of reference for the design team.

At the end of 2010, Cerrejon had procedures for community and employment grievances and resettlement issues. They found that a centralized database enhanced their management systems. The mechanism not only provided Cerrejon with an opportunity to resolve issues in a systematic and orderly manner but also transformed their relationship to include a more participative role. (Anglo American, 2015).

For Anglo American, the experience brought by the implementation of a grievance mechanism provoked a shift on the company approach with its external stakeholders. It helped them transition from a defensive to an engaging position with shared accountability.

Hudbay Minerals is another mining company that shows that having a credible system to deal with complaints and concerns in a fair and consistent manner can generate confidence in its communities. This is only possible to achieve through engagement, openness and transparency (Hudbay, 2015). Hudbay experienced the consequences of before and after implementing a feedback system. They had to face a strike in 2013 which they felt it would not have happened if they had a feedback system in place to capture the concern before it intensified, and the problem motivating the conflict could have been easily solved.

In 2014, after their community response mechanism was in place, they were able to identify a problem originated by the lack of training: payments to communities were being deferred due to their capacity deficiency in properly filling out forms. The number of complaints
captured by their feedback system identified the need for further training in procedures and improvement in their internal processes.

The most latent positive effect generated by the feedback mechanism is the improvement in engaging with the communities. For the communities, the grievance system produces a perception that they will always be able to express their voice. By identifying gaps and needs throughout the concerns and complaints raised, companies are capable of minimizing risks before they escalated into conflicts.

Companies are authenticating the use of a grievance mechanism in assisting them to significantly improve their relationship with their surrounding communities.

5.4 Summary

Considering the complexity of the environment where mining mostly operates (e.g., lack of government presence and often vulnerable communities with lost voices), the findings suggest industry centers its efforts to ensure the three elements are present in their management systems: guiding principles, good governance and capacity building.

One substantial component implicit in the three elements is the significance of community participation which encompasses diversity and inclusion, and more importantly, capacity enhancement in order for communities to achieve a full and genuine participation. The case studies reflect where the essential elements are either present or lacking.

As stated in chapter 3, education needs to be reoriented in order to support sustainability. A multi-stakeholder collaborative approach towards a holistic and integrated consideration of social, economic and environmental aspects is the path to achieve sustainable development. Education for sustainability requires a review of the curricula in the direction of assessing processes that would drive people to reinforce and build a more sustainable future (UNESCO, 1997, p. 57 to 68) (UNESCO, 1997, pp. para 57 - 68).
6.0 Discussion and Analysis

This chapter aims to answer the questions raised in the introduction of this report. The query guiding this investigation is around defining key elements to support community engagement and development in complex environments, investigating the role of community participation in the development and tools that can be effective to enable engagement and development.

This work proposes the recognition of the following components as being critical to community engagement and development: guiding principles, capacity building and good governance; and consequently the accentuation of these elements for educational purposes.

6.1 The Essential Elements

The principal question leading this study is about the essential elements to support community participation and sustain development in complex environments, more specifically in the mining environment setting, and how to maximize these concepts on the education of future professionals to affect change. The literature review offers critical content to determine key elements particularly in the light of mining industry standards. Assessing companies’ case studies and appraising their stories through challenges and achievements is helpful in concluding which fundamental ingredients should be the focus of the syllabus for the Mine 555 course.

Natural resources consumption is a reality that will not disappear in the foreseeable future. Several developments and operations are located in remote areas where communities are in vulnerable situations and Indigenous Peoples live. Sustainability requires a strategic participatory approach through multi-stakeholder involvement and can only be achieved with a holistic approach that incorporates social, economic and environmental values (Ferdig, 2007, p. 28). Integrating these values plays an imperative role in preserving a productive and trustworthy relationship with stakeholders. Positioning social standards next to environmental and economic principles shows inclusiveness and firm intention for integration.
Case studies 1, 2, 4, and 5 demonstrate how companies can add value by embracing responsibility. Case Study 3 establishes the importance of inclusiveness. Although each case study highlights one specific element, they all reflect the three essential elements. Table 4 summarizes these findings:

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Description</th>
<th>Principles</th>
<th>Capacity Building</th>
<th>Good Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Study 1</td>
<td>UN Guiding Principles on Business and Human Rights, FPIC, IFC Involuntary Resettlement guideline and ILO C-169</td>
<td>Individual</td>
<td>Transparency, Participation, Fairness, Consensus Oriented, Inclusiveness</td>
<td></td>
</tr>
<tr>
<td>Case Study 2</td>
<td>Towards Sustainable Mining, MAC – guideline for mining closure</td>
<td>Individual, Organizational, Institutional</td>
<td>Transparency, Participation, Fairness, Inclusiveness</td>
<td></td>
</tr>
<tr>
<td>Case Study 3</td>
<td>Empowerment – expanding people’s ability to influence issues that affect their communities; Participation – contribution to decision making; Inclusion, equality of opportunity and anti-discrimination – giving voice to groups in vulnerable position;</td>
<td>Individual, Organizational, Institutional</td>
<td>Transparency, Participation, Fairness, Inclusiveness, Responsiveness, Consensus Oriented</td>
<td></td>
</tr>
<tr>
<td>Case Study 4</td>
<td>ICMM - Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities</td>
<td>Individual, Organizational, Institutional</td>
<td>Transparency, Participation, Fairness, Inclusiveness, Accountability</td>
<td></td>
</tr>
<tr>
<td>Case Study 5</td>
<td>UN Guiding Principles on Business and Human Rights, ICMM - Respect human rights and the interests, cultures, customs of employees and communities affected by the activities</td>
<td>Individual, Organizational</td>
<td>Transparency, Participation, Fairness, Inclusiveness, Responsiveness</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Case Studies and the Essential Elements

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11 Based on “Working and Learning Together to Build Stronger Communities” (Government of Scotland, 2004).
The social context within communities, groups and organizations is dynamic and presents new challenges as connections evolve. There are diverse expectations that may need to be addressed during mineral exploration, construction and operating phases. Disagreements are an inevitable consequence of interactions due to the different needs and requirements of the stakeholders involved. Nevertheless, balancing differences and solving conflicts can offer remarkable opportunities to strengthen relationships.

When looking at successful community initiatives, economic progress may be secondary and success can also be measured on how the initiative positively affected the community towards bridging connections, reinforcing identity, increasing engagement and active citizenship.

With a vision to form a future where sustainability is integral to the decision making process of an organization, GRI focuses its belief in the power of multi-stakeholder processes and an inclusive approach, and, with that, they foster organizations to observe principles, abide by good governance and work towards capacity building.

Appendix IV illustrates how the many different indicators from GRI are related to one or more of the key elements identified as indispensable to support engagement and development. This table is strategic in influencing the findings and consequently, prominent in the formation of the options suggested in Chapter 7.

### 6.2 The Role of Community Participation in Development

One of this study’s secondary questions aims to explore the role of community participation in development. Whereas mining companies learn from their mistakes they must care more about community participation, not only because it is the right thing to do, but failure to do so may result in loss of revenue for the company and can generate conflicts for the communities. It is estimated that currently there are more than 400 serious conflicts between communities and resource developers only in Latin America (Global Indigenous Trust, 2017). The result of community opposition is a loss of almost C$35 billion in stalled projects around the world (Cutifani, 2017).
When comparing the observations from PRIA’s experience to the practices of the mining industry, it is possible to distinguish the areas where mining can gain some strength to achieve the needed sustainability in community development surrounding its operations. These include promoting diversity and inclusiveness, and creating an environment to empower capacity building at individual, organizational and institutional levels.

In addition to ensuring that benefits generated by mining presence are shared within the communities, stakeholders’ participation decreases the risk of conflicts and increases accountability and sense of ownership (Masaitis, 2013). Community participation can be observed in the five case studies presented in Chapter 5.

Stakeholders need to be informed and empowered so that they can participate in the development process (Tandon, 2017). Simply put, community participation is fundamental and necessary to achieve sustainability in development.

### 6.3 Effective Tools and Smart Measures

This study’s third question asks what tools can be effective to enable community engagement and development. In addition to multi-stakeholder approaches and participatory engagements, a tool that is significant for good governance and is recommended by best international practices to affect engagement and minimize risks of community conflicts are feedback systems - mentioned in chapter 5.3 and exemplified through graphs in Appendix V.

Feedback systems are being ratified as instruments able to help tackle the challenges of harmonizing cultural differences and fulfilling the needs of diverse stakeholders. They can be a distinctive tool to engage with stakeholders and provoke a transformation in the future of an organization, converting its approach to an engaging manner rather than a defensive one. Companies are validating through their own experience that a genuinely collaborative approach with communities surrounding their facilities is more effective and sustainable. In addition to being a source for opportunities, feedback processes are an invaluable tool for management systems improvement, work as needs detectors, and show tendencies and potential risks.
A feedback system proposes to support a community as a Complex Adapting System because it:

- Can capture multiple opinions, actions, reactions and values;
- Empowers bottom-up approaches, organic growth, shared learning processes and the search for systemic causes;
- Can be a distinctive tool to engage with stakeholders and provoke a transformation for both the company and the communities;
- Can give a voice to populations in vulnerable situations;
- Has the potential to convert a company’s approach to an engaging manner rather than a defensive one.

When envisioning a guideline for smart measures to attain sustainability in Community Engagement and Development in Mining, a holistic approach is imperative to integrate social, economic and environmental aspects without compromising the needs of future generations.

An attempt to combine lessons learned from PRIA with good practices in mining supported by GRI and other principles and standards is presented in Appendix VII by means of a proposed set of smart measures.

### 6.4 Summary

In view of multi-organization structures and its complexities, system regulations are as vital as system awareness (Morgan, 2005). Nevertheless, they do not replace regular consultations with communities’ representatives, governments and any other stakeholders. An appropriate due diligence when initiating a relationship with a community, including stakeholder mapping and analysis will help in integrating their needs into core business systems.

A lesson learned during the final two classes of the course Mine 555 was the role of transparency when it comes to education for sustainability and the responsibility mining companies may have in this context. One of the mining companies that shared their experience was very open about the challenges they faced and their earlier mistakes, despite the fact that the company counted on a very positive reputation of their history of corporate social
responsibility. On the other hand, students observed that the other company, which was regarded with a negative perception in general news related to human rights and alleged crimes against communities and indigenous peoples was behaving defensively and avoiding uncomfortable questions by redirecting their answers to a different subject. Acknowledging mistakes can lead to a vital role in leadership development and may show that one learned and will perform differently in future (Gallo, 2010).
7.0 Options to Consider

It is fair to recognize and acknowledge that Mine 555 contains a strong ethical component and drive students to an empathic approach, developing their ability to comprehend and share the feeling of other affected parties.

While the main recommendation is to keep the dynamic approach in the Mine 555 course, and maintain its present content that motivates students to explore their passion and compassion from different perspectives, the results of this study suggest emphasizing the three essential elements in each class would create a leverage that can affect change in future. Active learning strategies are suggested in 7.1 Exploring Mining Facts and Debugging Myths, 7.2 Smart Measures Guideline and 7.3 Inserting the Three Essential Elements in Each Class.

Principles, capacity and good governance can be inserted in each of the classes by getting students to identify examples where the elements are being applied or where the lack of their existence causes a negative impact.

There is also opportunity to increase awareness and improve discussions by asking students to create a fact sheet to debug industry myths, and to use a smart measures guideline throughout the course.

Another option is to invite professionals and communities to participate in the classes and share their experiences. It is recommended that the following options are considered to be introduced in the present content of the course:

7.1 Exploring Mining Facts and Debugging Myths

Students can develop a chart through the course where they will add relevant mining facts to debug myths while exploring false perceptions of the industry and alternatives to improve awareness. They can link their findings and suggestions to the three elements – principles, capacity building and good governance. Appendix VIII is an example of mining facts that can be addressed.
7.2 Smart Measures Guideline

Students can create a simple guideline with smart measures, as part of the program, to strengthen stakeholder relations and support community development around mining operations. The guideline can be developed by adding a lesson learned from each class. Students can be encouraged to identify elements that are used or not used by the examples examined in class. There are a number of guidelines available from different organizations as well as from mining companies; an attempt to exemplify smart measures is described in Appendix VII.

7.3 Inserting the Three Essential Elements in Each Class

One way to emphasize the three elements – principles, capacity and good governance – would be to ask groups of students to prepare for the following class by identifying examples where one of the elements are either missing or applied. For instance, students could prepare a 60 seconds talk (The Quickie) about one of the elements. The GRI and mining sustainability reports would be a good source for students to pick from.

7.4 Inviting Professionals and Communities to Share their Experiences

As explored in chapter 3.5.1 Graduate and University Courses in Mining and Social Issues, one vital component to achieve a realistic education of new professionals, is for students to learn from the industry’s experiences. It would be of great significance to include the participation of communities and indigenous groups affected by mining, as well as other stakeholders such as government and organizations such as the ICMM, MAC and GRI. In order to create a safe environment where challenges can be discussed with transparency, it is suggested the use of the “Chatham House Rules” to facilitate free speech and confidentiality, as participants are free to share information without identifying the speaker or its affiliation outside of the group.

With the opportunity of organizing the final two classes of the winter program, the author invited professionals from the mining industry to participate in the program.

The first class organized welcomed the contribution from a mining company through its Director of Sustainability. The mining company counted on over 6,500 employees operating in
five different countries. The students were exposed to examples of what was relevant for the company as well as for the communities surrounding their operations and all the complexities involved in the relationship.

For the final class, students were taken to the headquarters of another mining company, this one operating in six countries over the Americas and with a workforce of more than 15,000 people. The class took place in their boardroom where the President gave a strong message on the importance of sustainability for a mining company. The message was subsequent to a presentation from their Corporate Social Responsibility Director.

The students prepared for both classes in advance by checking news and published documents involving the companies. The presentations were followed by a discussion about the challenges the companies have faced in the past.
8.0 Conclusion

The purpose of this report is to review the content of the Mine 555 course from UBC and to propose the insertion of relevant elements to complement the understanding of social challenges faced by mining as well as to discuss approaches that support community engagement and development.

This research centers on the disciplines of:

i) Community Engagement and Development: by leveraging a graduate course to insert awareness on enhancing capacity for participatory frameworks;

ii) Dispute Resolution: by recommending tools to minimize and transform conflicts (a growing occurrence in communities surrounding mining operations); and

iii) Public Administration: by motivating companies to empower communities to aim for common objectives towards long-term results through inclusive and informed decisions, changing the way a community makes choices and decisions.

In order to make recommendations to complement the syllabus for the Mine 555 program, a search for the essential elements to sustain development and empower community engagement in complex environments was launched. The focus of this study was community engagement and development taking place in the mining surroundings. An important step of this study is lead by experiences gained at PRIA, by means of observing their know-how in relationships and developments with communities that were not related to mining. Such understanding serves to identify the need for centralizing efforts on capacity building.

Reviewing the most accepted principles and standards applied by the industry serves to distinguish the one that could better represent them all. The Global Reporting Initiative was chosen based on its expansive benchmarking and collaboration with other reputable standards. A wide literature appraisal concentrated on reviewing the standards from the Global Reporting Initiative assists in diagnosing the interconnection and magnitude of principles, capacity and good governance as a recipe to achieve sustainability.
One substantial component implicit in the three elements - principles, capacity and good governance - is the significance of community participation which encompasses diversity and inclusion, and more importantly, the efforts of a company in creating an environment to facilitate capacity building for communities to achieve a full and genuine participation. The literature review also exposes case studies where the essential elements are either present or lacking.

A successful outcome of this research would be the university deciding to incorporate the recommendations contained in this report to complement the Mine 555 course syllabus. Preliminary feedback on classes organized with external participation shows that students found the sessions contributed highly to their development.

In addition, there are opportunities for the course to build internal and external capacity and disseminate awareness towards promoting sustainable development around mining operations. Such prospects should not only be for the students enrolled in the course but it could also be propagated throughout the university by means of short presentations that could take place throughout the year (for example, a Mining Day).

A third possibility would be for the Mine 555 course to offer one- or two-day workshops with an intensive version of the full course to be available for stakeholders at UBC and elsewhere.

In a time where mining is required to take increasingly responsible positions, it is recommended that the content of the Mine 555 course is aligned and updated with mechanisms and foundations that support and advocate inclusion and diversity through capacity building and public participation in development that affects their present and future.
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Appendix I: Geographical Distribution of Canadian Mining Assets
Appendix II: Canadian Mining Assets by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>2012 (r) ($ billions)</th>
<th>2013 ($ billions)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>22.4</td>
<td>24.1</td>
<td>7.8</td>
</tr>
<tr>
<td>Americas (excluding Canada)</td>
<td>99.8</td>
<td>103.9</td>
<td>4.2</td>
</tr>
<tr>
<td>Asia</td>
<td>9.2</td>
<td>9.7</td>
<td>4.7</td>
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<tr>
<td>Europe</td>
<td>9.7</td>
<td>11.2</td>
<td>15.1</td>
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<tr>
<td>Oceania</td>
<td>5.5</td>
<td>4.3</td>
<td>-20.2</td>
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<td><strong>Total CMAA</strong></td>
<td><strong>146.5</strong></td>
<td><strong>153.2</strong></td>
<td><strong>4.6</strong></td>
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<td>Canada</td>
<td>76.1</td>
<td>80.7</td>
<td>6.0</td>
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<tr>
<td><strong>Total CMA</strong></td>
<td><strong>222.6</strong></td>
<td><strong>233.9</strong></td>
<td><strong>5.1</strong></td>
</tr>
</tbody>
</table>

Source: Natural Resources Canada.
(r) Revised.
Note: Numbers may not add to totals due to rounding.
Appendix III: UBC - Mine 555 - Mining and Society Course Content
(Provided by Prof. Marcello Veiga)

OUTLINE

- Ethics and Mining
  - Policies adopted by mining companies
  - How mining companies promote themselves
  - Image of mining on the Web
  - Inconsistencies (Environmental policies vs. practice)
  - Unacceptable practices (e.g. riverine disposal)

- Mining and Public Perception
  - Review of behavior and arguments of the mining opponents
  - Identification of opponents
  - General perception about use of a non-renewable resource
  - Reasons for bad perception (e.g. abandoned mines, ARD, metals in drainage)

- Mining and Communities
  - What is a mining community and its importance in Canada and abroad
  - Short vs Long-term approach by mining companies
  - Public involvement or consultation?
  - Successful programs
  - Capacity building within companies, communities and government
  - Transparency and access to information

- Sustainable Development Applied to Mining
  - NRCan policy
  - Companies policy (e.g. environmental management)
  - Implementation in the mining operation
  - Advantages and Drawbacks
  - Practical measures
  - Recycling vs Mining

- Conflict Resolution
  - Risk communication
  - Community, company and government profiles
  - Negotiation and mediation
  - Building trust

- Responsible Mining
  - Best practices (environmental and social)
  - Indicators of appropriate mine reclamation practices
  - Voluntary initiatives
  - Changing in attitudes

- Whitehorse Mining Initiative
  - Definition of stakeholders
  - Public participation in decisions
- Aboriginal Issues
- Role of Government Agencies

- Legal aspects
  - Banning cyanide
  - Banning open-pit operations
  - Aboriginal Issues
  - Role of Government Agencies
  - Role of NGOs

- Metals in the Environment and public perception
  - Tailing dam spills
  - Cases of metal contamination (e.g. Cr, As, Hg) and health effects
  - Case studies of public reaction and compensation systems
  - Blunders and effective actions by companies

**RECOMMENDED TEXTS AND BOOKS:**

## GRI Standards Analysis

### GRI STANDARD DISCLOSURES

<table>
<thead>
<tr>
<th>Category</th>
<th>Aspect</th>
<th>Number of Indicators</th>
<th>Example of Indicators Connected to Principles, Capacity and/or Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Strategy &amp; Analysis</td>
<td>2</td>
<td>The relevance of sustainability to the organization and the organization’s strategy for addressing sustainability</td>
</tr>
<tr>
<td>General</td>
<td>Organizational Profile</td>
<td>14</td>
<td>Transparency, diversity and inclusion on labor disclosures plus listing economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses</td>
</tr>
<tr>
<td>General</td>
<td>Material Aspects and Boundaries</td>
<td>7</td>
<td>Relevant topics reflecting the organization’s relevant economic, environmental and social impacts</td>
</tr>
<tr>
<td>General</td>
<td>Stakeholder Engagement</td>
<td>4</td>
<td>Report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns</td>
</tr>
<tr>
<td>General</td>
<td>Report Profile</td>
<td>6</td>
<td>Indicate if the Standard Disclosure has been externally assured</td>
</tr>
<tr>
<td>General</td>
<td>Governance</td>
<td>22</td>
<td>Report processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics</td>
</tr>
<tr>
<td>General</td>
<td>Ethics &amp; Integrity</td>
<td>3</td>
<td>Identify how the organization’s values, principles, standards and norms of behavior (such as codes of conduct, codes of ethics) have been developed, approved, and implemented</td>
</tr>
<tr>
<td>Specific: Economic</td>
<td>Economic Performance</td>
<td>4</td>
<td>The economic dimension of sustainability concerns the organization’s impacts on the economic conditions of its stakeholders, and on economic systems at local, national, and global levels</td>
</tr>
<tr>
<td>Specific: Economic</td>
<td>Market Presence</td>
<td>2</td>
<td>Ensuring that senior management is drawn from the local community can benefit the local community. Diversity within a management team and the inclusion of members from the local community can enhance human capital, the economic benefit to the local community, and the organization’s ability to understand local needs</td>
</tr>
<tr>
<td>Specific: Economic</td>
<td>Economic Indirect Impacts</td>
<td>2</td>
<td>Explain the significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and</td>
</tr>
</tbody>
</table>
## GRI STANDARD DISCLOSURES

<table>
<thead>
<tr>
<th>Category</th>
<th>Aspect</th>
<th>Number of Indicators</th>
<th>Example of Indicators Connected to Principles, Capacity and/or Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific: Economic</td>
<td>Procurement Practices</td>
<td>1</td>
<td>Proportion of spending on local suppliers at significant locations of operation</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Materials</td>
<td>2</td>
<td>Describe the organization’s contribution to the conservation of the global resource base and its efforts to reduce the material intensity and increase the efficiency of the economy</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Energy</td>
<td>5</td>
<td>The environmental footprint of an organization is shaped in part by its choice of energy sources. Changes in the balance of these sources can indicate the organization’s efforts to minimize its environmental impacts</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Water</td>
<td>3</td>
<td>In regions where water sources are highly restricted, the organization’s water consumption patterns can also influence relations with other stakeholders</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Biodiversity</td>
<td>4</td>
<td>Ensuring the integrity of natural habitats can enhance the reputation of the organization, the stability of its surrounding natural environment and resources, and its acceptance by surrounding communities</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Emissions</td>
<td>7</td>
<td>Explain whether the organization is subject to any country, regional, or industry regulations and policies for emissions. Provide examples of such regulations and policies</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Effluents and Waste</td>
<td>5</td>
<td>Identifying water bodies affected by discharges provides an opportunity to identify activities in regions of significant concern, or areas where the organization may face specific risks such as community concerns and limited water resources</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Products and Services</td>
<td>2</td>
<td>Organizations are expected to take more proactive approaches to assessing and improving the environmental impacts of their products and services</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Compliance</td>
<td>1</td>
<td>The strength of the organization’s compliance record can also affect its ability to expand operations or gain permits</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Transport</td>
<td>1</td>
<td>Assessing the impacts of transporting is part of a comprehensive approach to planning environmental management strategies</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Overall</td>
<td>1</td>
<td>Measuring environmental mitigation and protection expenditures allows</td>
</tr>
</tbody>
</table>

International standards, protocols, and policy agendas
<table>
<thead>
<tr>
<th>Category</th>
<th>Aspect</th>
<th>Number of Indicators</th>
<th>Example of Indicators Connected to Principles, Capacity and/or Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific: Environment</td>
<td>Supplier Environment Assessment</td>
<td>2</td>
<td>Describe processes used, such as due diligence, to identify and assess significant actual and potential negative environmental impacts in the supply chain</td>
</tr>
<tr>
<td>Specific: Environment</td>
<td>Environment Grievance Mechanism</td>
<td>1</td>
<td>Describe the availability and accessibility of grievance mechanisms and remediation processes for environmental impacts, including along the organization’s supply chain, and the involvement of stakeholders in monitoring their effectiveness</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Employment</td>
<td>3</td>
<td>Describe actions taken to determine and address situations where working conditions in the organization’s supply chain did not meet international labor standards or national labor law</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Labor/Management Relations</td>
<td>1</td>
<td>Assessment of an organization’s consultation practices in relation to expectations expressed in relevant international norms</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Occupational Health and Safety</td>
<td>4</td>
<td>A health and safety committee with joint representation can facilitate a positive health and safety culture. The use of committees is one way to involve workers in driving the improvement of occupational health and safety in the workplace</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Training &amp; Education</td>
<td>3</td>
<td>Maintaining and improving human capital, particularly through training that expands the knowledge base of employees, is a key element in organizational development</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Diversity &amp; Equal Opportunity</td>
<td>1</td>
<td>The level of diversity within an organization provides insights into the human capital of the organization</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Gender Remuneration Equality</td>
<td>1</td>
<td>Equality of remuneration is a factor in retaining qualified employees in the workforce. Where imbalances exist, an organization runs a risk to its reputation and legal challenges on the basis of discrimination</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Supplier Labor Assessment</td>
<td>2</td>
<td>Organizations are encouraged to break down the information requested by this Indicator by the location of the supplier and the significant actual and potential negative impact for labor practices</td>
</tr>
<tr>
<td>Specific: Social Employment</td>
<td>Labor Grievance Mechanism</td>
<td>1</td>
<td>Describe the availability and accessibility of grievance mechanisms and remediation processes for impacts on labor practices, including along the organization’s supply chain, and the involvement of stakeholders in</td>
</tr>
<tr>
<td>Category</td>
<td>Aspect</td>
<td>Number of Indicators</td>
<td>Example of Indicators Connected to Principles, Capacity and/or Governance</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Investment</td>
<td>2</td>
<td>Integrating human rights criteria in screening or including human rights in performance requirements may be part of a strategy to reduce the risks of investment and reputational damage.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Non-discrimination</td>
<td>1</td>
<td>An effective monitoring system is necessary to ensure compliance throughout the organization’s operations. Stakeholders seek assurance that such policies and monitoring are effective.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Freedom of Association</td>
<td>1</td>
<td>Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Child Labor</td>
<td>1</td>
<td>The abolition of child labor is a key principle and objective of major human rights declarations and legislation. The presence and effective implementation of policies on child labor are a basic expectation of socially responsible conduct.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Forced Labor</td>
<td>1</td>
<td>Not to be subjected to forced or compulsory labor is considered a fundamental human right. Forced or compulsory labor exists in a variety of forms and the data provided will indicate the organization’s challenges in contributing to the elimination of such labor.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Security Practices</td>
<td>1</td>
<td>The conduct of security personnel towards third parties is underpinned by their training in human rights, particularly regarding the use of force. Training security personnel can help prevent reputational and litigation risks that arise from inappropriate actions or approaches not condoned by the organization.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Indigenous Rights</td>
<td>1</td>
<td>The total number of recorded incidents involving the rights of indigenous peoples provides information about the implementation of an organization’s policies relating to indigenous peoples.</td>
</tr>
<tr>
<td>Specific: Social Human Rights</td>
<td>Assessment</td>
<td>1</td>
<td>Organizations may affect human rights directly, through their own actions and operations, and indirectly, through their interaction and relationships with others, including governments, local communities and suppliers.</td>
</tr>
</tbody>
</table>
| Specific: Social Human Rights| Suppliers Assessment         | 2                    | Describe how expectations are established and defined in contracts with...
<table>
<thead>
<tr>
<th>Category</th>
<th>Aspect</th>
<th>Number of Indicators</th>
<th>Example of Indicators Connected to Principles, Capacity and/or Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific: Social Human Rights</td>
<td>Grievance Mechanism</td>
<td>1</td>
<td>Describe the availability and accessibility of grievance mechanisms and remediation processes for human rights impacts, including along the organization’s supply chain, and the involvement of stakeholders in monitoring their effectiveness</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Local Communities</td>
<td>2</td>
<td>A key element in managing impacts on people in local communities is assessment and planning in order to understand the actual and potential impacts, and strong engagement with local communities to understand their expectations and needs</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Anti-corruption</td>
<td>3</td>
<td>Describe the extent to which communication and training on anti-corruption is tailored to those governance body members, employees, and business partners that have been identified as having a high risk of incidents of corruption</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Public Policy</td>
<td>1</td>
<td>Provide the organization’s core position for each of the identified issues, and describe any significant differences between lobbying positions and stated policies, sustainability goals, or other public positions</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Anti-competitive Behavior</td>
<td>1</td>
<td>This Indicator pertains to legal actions initiated under national or international laws designed primarily for the purpose of regulating anti-competitive behavior, anti-trust, or monopoly practices</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Compliance</td>
<td>1</td>
<td>Identify administrative or judicial sanctions levied against the organization for failure to comply with laws or regulations, including international declarations, conventions, and treaties; and national, sub-national, regional, and local regulations</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Supplier Assessment</td>
<td>2</td>
<td>Describe processes used, such as due diligence, to identify and assess significant actual and potential negative impacts on society in the supply chain</td>
</tr>
<tr>
<td>Specific: Society</td>
<td>Grievance Mechanism Impacts</td>
<td>1</td>
<td>Describe the availability and accessibility of grievance mechanisms and remediation processes for impacts on society, including along the organization’s supply chain, and the involvement of stakeholders in monitoring their effectiveness</td>
</tr>
<tr>
<td>Category</td>
<td>Aspect</td>
<td>Number of Indicators</td>
<td>Example of Indicators Connected to Principles, Capacity and/or Governance</td>
</tr>
<tr>
<td>--------------------------</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Specific: Product</td>
<td>Customer Health and Safety</td>
<td>2</td>
<td>Protection of health and safety is a recognized goal of many national and international regulations</td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific: Product</td>
<td>Product and Service Labelling</td>
<td>3</td>
<td>Accessible and adequate information on the sustainability impacts of products and services (positive and negative) is necessary for customers and end users to make informed purchasing choices</td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific: Product</td>
<td>Market Communication</td>
<td>2</td>
<td>Identify the mechanisms that the organization uses to track engagement with stakeholders and how the organization has responded to questions or concerns regarding products</td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific: Product</td>
<td>Customer Privacy</td>
<td>1</td>
<td>Protection of customer privacy is a generally recognized goal in national regulations and organizational policies</td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific: Product</td>
<td>Compliance</td>
<td>1</td>
<td>Identify administrative or judicial sanctions levied against the organization for failure to comply with laws and regulations, including international declarations, conventions and treaties, and national, sub-national, regional, and local regulations concerning the provision and use of the organization’s products and services.</td>
</tr>
<tr>
<td>Responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Biodiversity</td>
<td>2</td>
<td>The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Emissions, Effluents &amp; Waste</td>
<td>1</td>
<td>Total amounts of overburden, rock, tailings, and sludges and their associated risks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Labor</td>
<td>1</td>
<td>Number of strikes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Indigenous Rights</td>
<td>1</td>
<td>Total number of operations taking place in or adjacent to Indigenous Peoples’ territories, and number and percentage of operations or sites where there are formal agreements with Indigenous Peoples’ communities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Communities</td>
<td>2</td>
<td>Number and description of significant disputes relating to land use, customary rights of local communities and Indigenous Peoples.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Artisanal and Small Scale Mining</td>
<td>1</td>
<td>Number of company operating sites where artisanal and small-scale mining takes place; the associated risks and the actions taken to manage and mitigate these risks</td>
</tr>
<tr>
<td>Category</td>
<td>Aspect</td>
<td>Number of Indicators</td>
<td>Example of Indicators Connected to Principles, Capacity and/or Governance</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------------</td>
<td>----------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Resettlement</td>
<td>1</td>
<td>Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process</td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Closure Planning</td>
<td>1</td>
<td>Number and percentage of operations with closure plans</td>
</tr>
<tr>
<td>Sector Guidance: Mining &amp; Metals</td>
<td>Materials Stewardship</td>
<td>1</td>
<td>Programs and progress relating to materials stewardship</td>
</tr>
</tbody>
</table>
Appendix V: Examples of Grievance Mechanism Charts
(from Ipieca www.ipieca.org - the global oil and gas industry association for environmental and social issues)
Appendix VI: Theory of Change

*Theory of Change: Complementing the Mine & Society Course Program with the Essential Elements*

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>ACTIVITIES</th>
<th>OUTPUTS</th>
<th>OUTCOMES</th>
<th>IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Graduate students</td>
<td>- Highlight the essential elements: Guiding Principles, Capacity</td>
<td>Engaged and motivated students</td>
<td>Future professionals engaged with principles, capacity building and</td>
<td>Social transformation: self-sustainable communities accountable for their</td>
</tr>
<tr>
<td>- Instructors</td>
<td>Building and Good Governance</td>
<td></td>
<td>good governance</td>
<td>future.</td>
</tr>
<tr>
<td>- Mining Professionals</td>
<td>- Discuss and include multi-stakeholder approaches, inclusiveness and diversity</td>
<td>New mission: Mining supporting community participation</td>
<td>New vision: Mining and Communities as partners</td>
<td></td>
</tr>
<tr>
<td>- Community Development</td>
<td>- Feedback systems, Comprehensive Community Initiatives and Leverage Points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Community Leaders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why?  
- Resources  
- Results  
- Planning  
- Implementation
Appendix VII: Smart Measures in 10 Steps

Smart Measures for Community Engagement:

1. Getting to know each other – sharing information – learning from each other
   a. Building Trust: provide an inclusive environment so that people feel comfortable and safe in participating;
   b. Ensuring world view from different eyes – children, elders, men, women;
   c. Identifying and including vulnerable groups

2. Evaluating social, environmental, and economic impacts on communities

3. Capacity enhancement – build capacity to employ and source locally
   a. Education for sustainability – learning about rights and responsibilities, security and human rights
   b. Trusting community capabilities and knowledge – enhancing their capacity to propose, request, demand, give feedback, implement, plan, participate, discuss (soft skills + technical skills);
   c. Acting on different levels of capacity – individual: capacity of setting and achieving objectives; organization: resources, network, management; environmental: creating conditions: political, social, economic, cultural; and
   d. Strengthening leadership and local government capacities.

4. Evaluating existing initiatives to build on: Integrating and connecting resources, facilities and programs already available by other organizations; and

5. Managing expectations = Managing risks. When you cannot fulfill expectations your risk of failure increases. A couple of tips:
   a. Setting objectives that allow participants to employ their knowledge is imperative to motivate participation; and
   b. Identifying and prioritizing issues that are important to communities shows that you care and they matter;
Smart Measures for Community Development:

6. Make use of management tools: community response mechanism, Multi-stakeholder committees;

7. Empower local initiatives for: procurement, workforce, infrastructure, institutional capacity;

8. Plan for alternative livelihoods and mine closures;

9. Measure and Report Impacts; and

Appendix VIII: Mining Facts

<table>
<thead>
<tr>
<th>FACTS</th>
<th>PRODUCTS THAT RELY ON MINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining is the largest private sector employer of Aboriginal peoples in Canada;</td>
<td>Batteries (nickel, cadmium, lithium, cobalt)</td>
</tr>
<tr>
<td>Canada has one of the largest mining supply sectors globally with more than 3,700 companies supplying services to mining operations;</td>
<td>Circuitry (gold, copper, aluminum, steel, lithium, titanium, silver, cobalt, tin, lead, zinc)</td>
</tr>
<tr>
<td>Canada ranks in the top five countries in the global production of 13 major minerals and metals:</td>
<td>Smartphones, Computer and TV screens (silicon, boron, lead, barium, strontium, phosphorus, indium)</td>
</tr>
<tr>
<td>o First in potash</td>
<td>Energy (coal, uranium, oil sands)</td>
</tr>
<tr>
<td>o Second in uranium, nickel and niobium</td>
<td>Musical instruments (copper, silver, steel, nickel, brass, cobalt, copper, iron, aluminum)</td>
</tr>
<tr>
<td>o Third in cobalt, aluminum and platinum group metals</td>
<td>Sports equipment (graphite, aluminum, titanium, calcium carbonate, sulphur)</td>
</tr>
<tr>
<td>o Fourth in salt, sulphur and tungsten</td>
<td>Vehicles and tires (steel, copper, zinc, barium, graphite, sulphur, bromine, iodine)</td>
</tr>
<tr>
<td>o Fifth in diamonds, graphite and gold</td>
<td>ALSO: house construction, cosmetics, jewellery, eyeglasses, fertilizer, sun protection, pharmaceuticals, etc.</td>
</tr>
<tr>
<td>Globally, Canada is recognized for its leadership in safety and sustainability.</td>
<td></td>
</tr>
</tbody>
</table>

---

Every American Born Will Need...

3.03 million pounds of minerals, metals, and fuels in their lifetime

Geographical Distribution of Canadian Mining Assets
### Appendix IX: List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIT</td>
<td>British Columbia Institute of Technology</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>FPIC</td>
<td>Free Prior Informed Consent</td>
</tr>
<tr>
<td>GRI</td>
<td>Global Reporting Initiative</td>
</tr>
<tr>
<td>HESI</td>
<td>Higher Education Sustainability Initiative</td>
</tr>
<tr>
<td>ICMM</td>
<td>International Council on Mining and Metals</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labor Organization</td>
</tr>
<tr>
<td>MAC</td>
<td>Mining Association of Canada</td>
</tr>
<tr>
<td>MCD</td>
<td>Multi-sectorial Committee for Development</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Government Organization</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<tr>
<td>PDAC</td>
<td>Prospectors and Developers Association of Canada</td>
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<tr>
<td>PRIA</td>
<td>Participatory Research in Asia</td>
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<tr>
<td>TSM</td>
<td>Towards Sustainable Mining</td>
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<tr>
<td>UBC</td>
<td>University of British Columbia</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>University of Toronto</td>
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<td>UVic</td>
<td>University of Victoria</td>
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Appendix X: Graduate and University Courses in Mining and Social Issues

The following comparable course content was reviewed with the objective of assessing whether the programs were parallel:

**UBC**

The Mining and Society course from UBC is a channel for students to expand their horizons and perceptions of the environmental and social impacts provoked by mineral exploration projects, artisanal and small mines, as well as large-scale operations. The inclusive dynamic of the course is an opportunity for students to look at the same issues from different perspectives. By exploring real cases, the classes bring awareness and education to issues of sensitive importance such as environmental disasters, riverine disposal, mine and poverty, social investment, community engagement approaches, stakeholder mapping and artisanal mining. The goal is for discussion to delve into distinct angles and drive students to exercise their worldview perspectives.

In the past the course included participation of mining executives, but this has been replaced with the participation of consultants with field experience and involvement with artisanal mining, as it was felt that the latter discuss issues with more transparency, and therefore contribute more to student learning.

Role-playing and even composing parodical songs are admirable tools that are being used to engage students, making the Mining and Society course a popular choice at UBC (Veiga, Nichols, & Holuszko, 2015).

**Queens University (Queens)**

At Queens, the courses related to community relations and sustainability connected to mining are given by the Geology Department. In the past, Queens had the courses ‘Community Development for the Mining Industry’ and ‘Community Engagement and Mining’, but neither has been offered since 2015. Instead, Queens launched the courses ‘Mining Projects’ and ‘Indigenous Peoples, and Community Aspects of Mineral Resource Development’ which were
then followed by the course ‘Resources and Sustainability’. This course addresses mineral exploration challenges in providing well being for people and ecosystems (Queens University, 2015, p. 9). The course is divided in four parts:

- Part I: major global issues and concept of sustainability
- Part II: challenges of the resource industry in contributing to sustainable development
- Part III: challenges of professionals working in the mineral resource industry
- Part IV: the way forward and possible solutions

**British Columbia Institute of Technology (BCIT)**

As part of the Bachelor of Engineering in Mining and Mineral Resource Engineering program, BCIT offers in the final term, the course ‘Sustainability, Corporate Social Responsibility and Indigenous Awareness.’ The course aims to be an opportunity for a debate on environmental, ethical and social aspects of the modern mining industry. It proposes to look at approaches to sustainability through indigenous perspectives, global industry associations, national agendas, NGOs and corporate sustainability reports. It also addresses the triple bottom line: economic, environmental and social (BCIT, 2017).

**University of Toronto (UofT)**

One of the courses offered by the School of Environment at UofT is ‘Environmental Activism and Canadian Extractive Industry.’ The course aims to examine mining conflicts and to introduce debates on mining and sustainability (University of Toronto, 2015). The central question that leads the course is whether mining can be socially and environmentally responsible. There are also discussions around whether mining can help alleviate poverty and which practical actions can be taken to avoid or reduce negative impacts of the extractive industry on the society and environment.
Appendix XI: List of Tables, Figures and Case Studies

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