

**From Social Risk to Shared Purpose:
Reframing Mining's Approach to Corporate Social Responsibility**

by

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Abstract

From transportation to infrastructure, from energy to information technology, mining makes a significant contribution to society. It also impacts the lives of millions of people living in regions where mining occurs. Today, an increasing number of individuals and groups have earned a legitimate right to be considered as stakeholders in projects affecting their communities. This has given rise to mining-community conflict and is forcing companies to reconsider the approach to earning and retaining social approval. Global mining leaders have been working to implement policies and practices aligned with corporate social responsibility (CSR) tenets yet conflict between mining companies and the communities that host extractive operations appears to be growing.

This research seeks to quantify incidents of mining-community conflict and test a theory that reframing CSR to create shared value could deliver financial returns to mining operations while advancing economic and social conditions in associated communities. It is suggested that the UN 2030 Sustainable Development Goals (SDGs) provide a context for reframing CSR as a strategic business imperative. A new model of engagement is proposed that places the SDGs at the centre of mining-community engagement to align mining with the values of society and rebuild the sector's current trust deficit.

A multi-method research approach is used. The quantitative portion analyzes mining community conflicts from 2012 – 2015 as reported in the international media. Media coverage was hand-coded using a system adapted from conflict literature, and a document analysis of a sub-set of the conflict situations was employed to explore the results. A qualitative, theory-building case study investigates collaboration between personnel at the Cerro Verde Mine and

regional stakeholders to address regional water supply issues and develop a strategy with parallel goals: improving operational performance while delivering tangible social benefits.

The research seeks to contribute to CSR as a management strategy. The findings confirm there is both monetary and reputational value to investing in core social needs that intersect with business interests. A new model to build trust in mining and advance progress on the SDGs is proposed, and a concept presented that places CSR approaches within life-of-mine stages.

Lay Summary

Mining makes a valuable contribution to society but it can also impose adverse impacts on people, the environment, and nearby communities. This has frequently given rise to mining-community conflict and is forcing companies to reconsider the approach to earning and retaining social approval.

The first part of the research looks at situations of conflict and identifies common causes of mining-community tension. The research then moves on to consider how mining companies and communities might work together to advance the United Nations 2030 Sustainable Development Goals. To illustrate the potential in working collaboratively, the research investigates a case from Arequipa, Peru where mining personnel and regional stakeholders worked together to address water supply issues.

The research concludes that the UN 2030 Sustainable Development Goals provide mining companies with an opportunity to rebuild trust and create a social responsibility strategy that improves operational performance while delivering tangible social benefits.

Preface

This dissertation is an original intellectual property of the author, Jocelynn Fraser. The research problem was identified through applied work in the mining sector. The research methodology, data analysis, and reporting was designed and undertaken by the author.

Field work and one-to-one interviews, reported on in Chapter Five, and referenced elsewhere in the dissertation, were conducted under UBC Behavioural Research Ethics Board certificate of approval H16-00245.

Preliminary results from the media analysis, reported in Chapter Three, were published in the post conference proceedings of the Third Annual Future Mining Conference, held in Sydney Australia in October 2015. That work formed the basis of a presentation at the Sustainable Development in the Mining Industry (SDIMI) conference, held in Vancouver in June 2015. The paper was co-authored with Dr. Malcolm Scoble. I was the lead researcher and author contributing approximately 90 per cent of the effort; Dr. Scoble reviewed the paper, offered insight, and contributed to manuscript edits. A second conference paper presented at the SDIMI, was co-authored with Dr. Andre Xavier, and was published in the Mongolian Mining Journal No. 08 (081) pp 76-79. I was the lead author on the paper, contributing about 70 per cent of the research effort. Dr. Xavier contributed to the literature review, data collection, and drafting the manuscript.

The concept of reframing corporate social responsibility as a strategic business imperative was the focus of a feature article entitled “Social Risk as an Agent of Change” in the Australian Institute of Mining and Metallurgy’s magazine – the AusIMM Bulletin – published in

hard copy February 2016 and on line in April 2016¹. I was the lead author on the article with a contribution of 90 per cent. Co-author, Dr. Malcolm Scoble, contributed to manuscript edits.

¹ <https://www.ausimmbulletin.com/feature/social-risk-as-an-agent-of-change/>

Table of Contents

Abstract.....	ii
Lay Summary.....	iv
Preface	v
Table of Contents.....	vii
List of Tables	xiii
List of Figures	xiv
List of Abbreviations	xv
Acknowledgements.....	xix
Dedication.....	xxi
Chapter 1: Preparing to Advance the Cause.....	1
1.1 Introduction	1
1.2 The Mount Milligan Journey	4
1.3 The Challenge.....	6
1.4 From “Tried and True” to New	9
1.4.1 The Zamboni	10
1.4.2 The Cell Tower	10
1.4.3 The Recycling Centre.....	11
1.5 The Healthy Communities Legacy.....	13
1.6 Transforming the Approach to CSR.....	17
1.7 Statement of Intent.....	18
1.8 Exclusions and Rationale.....	20

1.9	Design of Research Approach	21
1.10	Research Contribution	27
Chapter 2: Defining and Applying Corporate Social Responsibility: Evidence to Support CSR as		
Strategy.....		
2.1	Introduction	29
2.2	Literature Review Methodology	29
2.3	Theoretical Perspectives of CSR.....	32
2.4	Definitions	34
2.5	The Origins and Evolution of Corporate Social Responsibility.....	38
2.6	Approaches to CSR.....	42
2.7	What’s in a Name?.....	48
2.8	Accountability	52
2.9	Mining-Community Conflict.....	53
2.10	Social License to Operate (SLO)	58
2.11	CSR Challenges	61
2.12	Lack of Social Acceptance	64
2.13	Trust Deficit.....	67
2.14	Summary and Conclusions.....	68
Chapter 3: A Media Analysis of Mining-Community Conflict and Investigation into the Value		
Proposition of Social Responsibility.....		
3.1	Setting the Stage	71
3.2	Methodology.....	76

3.3	Media Analysis	79
3.4	Findings	83
3.4.1	Incidents of mining-community conflict increased during the study period:	83
3.4.2	Countries experiencing mining-community conflict increased	86
3.4.3	Mining-community conflict does not appear to be commodity specific	88
3.4.4	Companies experiencing mining-community conflict increased.....	88
3.4.5	Causes of mining-community conflict	91
3.4.6	Barrick Gold and Pascua Lama: Multiple Drivers of Community Concern	93
3.4.7	Eldorado Gold: Benefits and Impacts	95
3.4.8	Taseko’s New Prosperity Project: Indigenous Rights and Environmental Issues.....	97
3.4.9	Tía María: Agros Si, Mina No!	100
3.5	Discussion.....	107
3.5.1	Current Approaches to CSR	109
3.6	Conclusions	114
Chapter 4: The Trust Deficit and the Opportunity of the SDGs		116
4.1	Trust, Credibility, and Reputation	117
4.2	The SDGs and Creating Shared Value (CSV).....	125
4.3	The SDGs: An Opportunity to Restore Trust in Mining via Collective Action	132
4.3.1	SDG #3: Good health and well being	134
4.3.2	SDG #6: Clean Water and Sanitation	136
4.3.3	SDG #9: Industry, Innovation, and Infrastructure.....	137

4.3.4	SDG #11: Sustainable Cities and Communities	137
4.3.5	SDG #15: Life on the Land	138
4.3.6	SDG #16: Peace, Justice, and Strong Institutions.....	138
4.4	Conclusions	139
Chapter 5:	Shared Purpose: Mining, Water, and Sanitation in Arequipa, Peru	142
5.1	Introduction	142
5.2	Case Frame: The SDGs.....	143
5.3	Case Context: Peru	144
5.4	Water	146
5.4.1	Peruvian Water Governance Overview	148
5.4.2	Water in Arequipa.....	148
5.5	Cerro Verde and the Circle of Water	149
5.5.1	The Cerro Verde Mine.....	150
5.5.2	Cerro Verde Case Methodology.....	154
5.5.3	Data Collection.....	154
5.5.4	Expansion Planning	157
5.5.5	Building a Business Case with Sustainability at the Core	161
5.5.6	Consultation	165
5.5.7	From Planning and Consultation to Action.....	168
5.5.8	Farmers	174
5.5.9	Challenges, Opportunities and Lessons Learned	176
5.5.10	Business Case	181

5.5.11 Lessons Learned	183
5.5.11.1 Lesson #1: Build a Multi-Disciplinary Team	184
5.5.11.2 Lesson #2: Engagement, Flexibility, and Innovation Contribute to Success	185
5.5.11.3 Lesson #3: Accept There are Multiple Realities.....	186
5.5.11.4 Lesson #4: Public Private Partnerships can Deliver Business Benefits while also Addressing Social Issues.	188
5.5.11.5 Lesson #5: Sustainability Delivers a Return on Investment.....	188
5.5.11.6 Lesson #6: Successful Projects Identify Opportunities for Future Projects	189
5.6 Measuring Success	191
5.7 Conclusions	193
Chapter 6: The Path Ahead: Mining’s Role in the 2030 SDG Agenda	199
6.1 Opportunity to Reframe CSR	202
6.2 Transactional, Transitional, Transformative: When to Use which CSR Approach?	204
6.3 Reducing Mining-Community Conflict through more Effective Social Responsibility Programs	210
6.4 Research Contribution	218
6.5 Limitations.....	219
6.6 Future Research	221
6.7 Conclusions	223
References	225

Appendices.....	251
Appendix A Factiva Media Analysis Mining-Community Conflict 2012-2015	252
A.1 Quantitative Analysis.....	252
A.2 Companies Experiencing Mining Community Conflict 2012-2015	277
A.3 Countries Experiencing Mining-Community Conflict 2012-2015	281
Appendix B Qualitative Analysis	283
B.1 One-to-One Interview Grouping (N=17).....	283
B.2 Semi Structured Interview Guide.....	284
B.3 NVivo Coding Chart.....	285

List of Tables

2.1	CSR approaches with the CSR continuum	44
3.1	Select CSR reporting and management initiatives	75
3.2	Coding sample	81
3.3	Revenue of the global mining industry 2012-2015	85
3.4	Countries experiencing conflict in every year of the study period	87
3.5	Commodities at mines affected by conflict.....	88
3.6	Conflict summary by company	90
3.7	CSR performance ratings.....	112
3.8	Select corporate community investment budgets YOY 2012 – 2015	114
4.1	Aligning trust to the CSR continuum	122
5.1	Cerro Verde facts.....	152
5.2	Comparative analysis Tía María and Cerro Verde.....	153
5.3	Chili River fecal coliform counts 2011	161
5.4	Chili River fecal coliform and BOD counts 2017	193
5.5	Summary research questions and outcomes	195
5.6	Sustainability scorecard.....	196
5.7	Cerro Verde activities across the CSR continuum	197
6.1	Resources to support transformative CSR planning	218

List of Figures

1.1	Mount Milligan social performance measures	8
2.1	Literature map	31
2.2	CSR continuum	44
2.3	UN 2030 Sustainable Development Goals	55
2.4	ICMM reported incidents of mining-community conflict	65
2.5	Net trust in industry sectors	67
3.1	Factiva media analysis global mining community conflict	84
3.2	Global exploration spending and discoveries	86
3.3	World map showing countries of mining-community conflict	87
3.4	Clusters of conflict causes	92
4.2	Stakeholder engagement models: current and conceptual.....	133
5.1	Peru socio-environmental conflicts.....	145
5.2	Circle of water SEDAPAR	171
5.3	La Enlozada wastewater treatment plant	172
5.4	Chili River pre-and post-wastewater treatment	173
6.1	Proposed model of CSR stages relative to life of mine	211
6.2	Organizational structure for transformative CSR.....	214

List of Abbreviations

AAA	Autoridad Administrativa del Agua
AGM	Annual general meeting
ALA	Autoridad Local del Agua
ANA	Autoridad Nacional del Agua
BCEAO	British Columbia Environmental Assessment Office
BOD	Biological oxygen demand
CBA	Cost benefit analysis
CDP	Carbon Disclosure Project
CED	Committee for Economic Development
CEAA	Canadian Environmental Assessment Agency
CR	Corporate responsibility
CSR	Corporate social responsibility
CSC	Community Sustainability Committee
CSO	Civil society organization
CSP	Corporate social performance
CSV	Creating shared value
CU	Copper
CV	Cerro Verde
DJSI	Dow Jones Sustainability Index
EITI	Extractive Industries Transparency Initiative
ENGO	Environmental non-governmental organization

EPCM	Engineering procurement and construction management
ESG	Environment, social and governance
E&Y	Ernst and Young
FCX	Freeport-McMoRan
FPIC	Free Prior and Informed Consent
GDP	Gross domestic product
GHG	Greenhouse gases
GRI	Global Reporting Initiative
GWI	Global Water Intelligence
HBR	Harvard Business Review
HIV/AIDS	Human immunodeficiency virus infection/acquired immune deficiency syndrome
ICMM	International Council of Mining and Metals
IFC	International Finance Corporation
ILO	International Labour Organization
IBA	Impact benefit agreements
IIRC	International Integrated Reporting Council
IRR	Internal rate of return
Km	Kilometre
KPI	Key performance indicator
KwH	Kilowatt hour
LB	Pound

LOM	Life of mine
LTI	Lost time incident
MMSD	Mining Minerals and Sustainable Development
Mo	Molybdenum
NDP	New Democratic Party
NGO	Non-governmental organization
NPV	Net present value
NTR	Non-technical risk
PA	Participation agreements
PUL	Power, urgency, legitimacy
SAGCOT	Southern Agricultural Corridor of Tanzania
SDGs	Sustainable Development Goals
SDIMI	Sustainable Development in the Mineral Industry
SEDAPAR	Servicio de Agua potable y Alcantarillado de Arequipa
SLO	Social license to operate
TPD	Tonnes per day
TSM	Towards Sustainable Mining
UN	United Nations
UNOPS	United Nations Office of Project Services
UNDRIP	United Nations Declaration of the Rights of Indigenous Peoples
US EPA	US Environmental Protection Agency
VPs	Voluntary Principles (Human rights and security)

WBCSD	World Business Council for Sustainable Development
WEF	World Economic Forum
WHO	World Health Organization
WWTP	Wastewater treatment plant

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My first month at UBC I met two people who helped me immensely. When I joined the Department of Mining Engineering, Dr. Andre Xavier was then a PhD candidate himself. He proved to be an invaluable resource, and, as the lead of the Peru Water Project at the Canadian International Resources Development Institute (CIRDI), created an opportunity for me to join his team. I feel lucky to have met him so early in my time as a PhD student.

The other person I met that first month at UBC was Dr. Jane Lister, formerly senior research fellow at the Liu Institute and now at UBC's Centre for Transportation Studies. We discovered we had similar backgrounds and similar interests in CSR and sustainability. Jane has been unfailingly generous with her time and expertise. She has offered encouragement when it was most needed, and created opportunities for research collaboration on CSR projects ranging from climate change to oil spill response. I am very grateful to her and look forward to many more opportunities to work together.

In 2016, I attended the Academy of Management's Alliance for Research on Corporate Sustainability's PhD leadership academy. The week at Western's Ivey School of Business with fellow PhD candidates and the academic faculty – Oana Branzei, Andrew Crane, Jeff McMullen and especially Alfred Marcus – made a tremendous impact. As did the opportunity to attend an executive leadership course at Harvard Business School taught by Michael Porter and Mark Kramer, originators of the “creating shared value” concept on which much of my research is based.

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Dedication

For Scott, who missed this journey, and for Devan and Emma who came along for the ride.

You inspire me.

Chapter 1: Preparing to Advance the Cause

1.1 Introduction

From transportation to infrastructure, from energy to information technology, mining makes a significant contribution to society. Industry proponents like to suggest that if a product is not farmed, it must be mined. Yet the value mining offers frequently does not offset the impact the industry has on the lives of millions of people living in regions where mineral extraction occurs. Mining was once valued for the jobs and opportunities it created. In the past 15 years, increasing opposition to mining at the community level has been documented (for e.g. Hilson, 2002; Davis & Franks, 2014, Kemp, 2010). Scholars have expressed differing opinions about the drivers of conflict. Some believe communities today are more empowered and better positioned to demand a fair share of the benefits generated by mining (Hodge, 2014). Others remain concerned that procedural fairness can be challenging due to the power imbalance that can exist between multi-national mining companies and communities, especially indigenous peoples living in areas where resources have not previously been developed (Hamann, 2014). While the causes of conflict can be complex and interwoven, there is agreement that an increasing number of individuals and groups have earned a legitimate right to be considered as stakeholders in projects which affect their communities. For this reason, this research is situated within stakeholder engagement theory, which endorses the idea that creating value for stakeholders also creates value for shareholders (Freeman, 2010).

The notion that business should add value to society is endorsed by many scholars yet there are divergent views on how to create that value. A central consideration of this research

is to determine if a more strategic approach to CSR could enhance business outcomes for mining companies while improving economic and social conditions in associated communities. Strategic CSR is defined as actions that support core business activities to yield business related benefits to the firm (Burke & Logsdon, 1996). This “win win” approach to company-community relations is proposed to address a question that intrigues both scholarly researchers and those involved in applied practice: does it “pay” to deliver CSR programs?

In seeking to further the discussion on this important topic, it is suggested that the announcement of the UN 2030 Sustainable Development Goals (SDGs) in September 2015, provides a context for reframing current approaches to CSR, and establishing CSR as a strategic business imperative. To date, there is little scholarly research on the implementation of the SDGs, but one of the lessons learned from the delivery of the Millennium Development Goals, the precursor to the SDGs, is the importance of private sector participation. Sachs (2012) has argued that the private sector must be “crucially engaged” from the start of SDG implementation and provide leadership to secure the ambitious targets. Management theories can be applied to address the SDGs by providing insight to how the SDGs can be addressed or by identifying the impact of the SDGs on business (George, Howard-Grenville, Joshi & Tihanyi, 2016). Of relevance, addressing the sustainability agenda of mining has been recognized as a challenge of global significance (Moran, Lodhia, Kunz, & Huisingh, 2014), which suggests the potential for alignment with the SDGs.

The key question investigated in this research is: if mining companies and impacted communities work together to identify mutual needs, and collaborate to address those common issues, will this shared approach to problem solving reduce conflict and position CSR

as a strategic business imperative? A multi-methods research approach, employing sequential quantitative and qualitative approaches, is used to investigate three hypotheses:

1. Increasing incidents of mining-community conflict are resulting from a failure on the part of mining companies to meet community expectations for sustainable outcomes.
2. Traditional corporate social responsibility programs, grounded in philanthropy and other forms of transactional stakeholder engagement, contribute to trust building but are not necessarily effective at reducing mining-community conflict.
3. It is possible to find “win win” solutions by augmenting standard philanthropic and performance optimization measures with CSR policies and practices that resolve problems shared by both company and community.

This work has academic relevance to literature on CSR as a management strategy.

For this research, a case study that investigates one company’s efforts to make a business decision with sustainability at its core is examined. The case aligns with SDG #6, which seeks to ensure access to clean water and sanitation. The intersection of water governance and water stewardship² is a topical issue, especially in resource-rich countries such as Peru, which are vulnerable to the impacts of climate change (Budds & Hinojosa, 2012). It is also an issue relevant for both mining companies and communities that host extractive operations (Kemp,

² The World Wildlife Federation defines water stewardship as business understanding the risks they face from water scarcity and pollution, and collaborating with governments, other businesses, NGOs, communities, and others to protect shared freshwater resources to help ensure water is managed sustainably, as a shared, public resource. http://wwf.panda.org/what_we_do/how_we_work/our_global_goals/water/water_management/

Bond, Franks , & Cote, 2010), and has implications for sustainability discussions (Prno & Slocombe, 2012).

The research question also has great relevance to me given my background as a sustainability practitioner. I grappled with the subject during my tenure as director of corporate social responsibility for a company building a new mine in a region of Canada known for the polarized views on resource extraction held by indigenous people and non-indigenous stakeholders. The following section outlines the story of the journey from mine approval to commissioning to frame the research approach and questions being investigated.

1.2 The Mount Milligan Journey

On October 8, 2013, I joined members of the construction and operations teams, the Board of Directors, invited guests from government, the community, local First Nations, mine suppliers and contractors, and members of a community sustainability committee, to officially commission the Mount Milligan copper-gold mine in north-central British Columbia. After 22 months of construction, we – the project management team – were about to hand off responsibilities to our operational colleagues and declare our job a success. Against some considerable odds, we built the first major new metals mine to be opened in British Columbia in more than a decade, brought the project into production on schedule, and we did it while accumulating more than five million hours without a Lost Time Incident (LTI), and without any work stoppages due to community protests or labour unrest.

The path to that day in late 2013 began back in 1984 when local Fort St James prospector Richard Haslinger staked a claim about eight kilometres (km) from Mount Milligan, or 350 km northwest of Prince George. The claim would change hands several times before it

was acquired in 1990 by Canadian mining giant, Placer Dome. Placer initiated work on a gold mine development plan but shelved the project in 1992 due, in part, to falling commodity prices. Another decade passed before the property was bought by junior-mining company, Terrane Metals. In 2009, Terrane secured federal and provincial environmental approvals for the construction of a 60,000 tonne per day (tpd) mine with a projected capital cost of \$950M. Terrane then entered discussions with Thompson Creek Metals, a mid-tier molybdenum mining company looking to diversify its operations. In November 2010, Thompson Creek closed a \$650M deal with Terrane Metals, acquiring the Mount Milligan asset.

As the project management team for the mine development came together, interviews were held for a position to support company efforts to earn its “social license to operate” (SLO). The phrase was coined by Jim Cooney, a former executive with Placer Dome who worked on the Mount Milligan project back in the 1990s. The term itself has been criticized but the concept is valid. A SLO means projects have both regulatory approval as well as effective relationships with local community officials and residents. On this occasion, the intent of earning the “social license” was clear: get Mount Milligan into production on schedule with no polarized opposition.

Two members of the Mount Milligan team came to Thompson Creek from a mine development project in Latin America. That project had encountered considerable social opposition as it transitioned from planning and permitting to the start of construction. Having found themselves the object of community derision, and in a period of violent mining-community conflict, they wanted to avoid community confrontation in British Columbia. As Thompson Creek began to plan for Mount Milligan’s construction and operations, the objective

was to maintain the trust and credibility earned by previous project owners and to secure a reputation as a valued partner in the region where the copper-gold mine would be located.

The idea of a project team willing to assess risk not only through the lens of legal, financial, and operating risk but also through the lens of reputational risk was intriguing, and the commitment to engaging stakeholders was refreshing. I signed on to the team, taking a role that would grow to include all of Thompson Creek's Corporate Social Responsibility (CSR) planning. I was there from the start of construction at Mount Milligan and stayed through to commercial production. The experience sharpened my interest in undertaking a PhD. While our project was considered a success by many, I became interested in investigating what mining companies could do to advance sustainable development. In particular, I wondered if mining companies could change their approach to social responsibility. Was there a way mining companies could deliver long-term value to both the business and to the communities that host mining operations?

1.3 The Challenge

Commissioning a greenfield mining project on schedule has increasingly become a "stretch" goal -- one that mining companies aspire to but struggle to achieve. A Goldman Sachs (2008) study examined 190 projects and indicated the time to develop mining projects had nearly doubled in a decade. Non-technical risk (NTR) accounted for 50 per cent of delays, with stakeholder-related risks the largest single NTR cause cited. Environmental consultancy, ERM, built upon the research by considering projects intended to come into production between 2008 – 2012 where, once again, lack of social acceptance, was cited as the leading cause of project delays (ERM 2014). The challenges experienced in many jurisdictions of the world

might be considered as “foreign” in Canada, a country with a stable political environment and good governance. But in British Columbia there was reason to be concerned. Unlike many parts of Canada, British Columbia is a jurisdiction of mostly unsettled land claims. This underlies complicated relationships with the region’s First Nations, especially in areas such as Mount Milligan where the Crown has recognized one nation’s title to land traditionally used by another. In addition, the province is the birthplace of Greenpeace, one of the best known of the leading global environmental non-governmental organizations (ENGOS). ENGOS’ ability to mobilize constituents and popularize issues of concern was refined in the 1990s during British Columbia’s “War in the Woods”³.

A further challenge to Mount Milligan was that under the previous provincial government there appeared to be an undeclared moratorium on mining in British Columbia. The years from 1991 – 2001 when the New Democratic Party (NDP) ruled the province has been called the mining sector’s lost decade, a period when NDP policies “sparked a decade-long exodus of mining and exploration dollars from the province” (Bennett, 2014). This meant community knowledge about mining and its social and environmental impacts was based on experience from the 1990s or earlier.

The three years between the initial meeting with the project team and the day of Mount Milligan’s opening presented many challenges. We did commission on schedule, but not on budget. The original capital cost of \$950 million ballooned to \$1.6 billion, while falling

³ The biggest environmental protest in Canadian history. The months-long blockade of logging operations in the Clayquot Sound on the west coast of Vancouver Island made international headlines, resulted in the arrest of more than 800 people, and halted the clear cutting of old growth forests, which had been common logging practice.

commodity prices contributed to a decline in the company’s market capitalization from \$1.5 billion in 2010 to less than \$400 million in 2013, and even lower in subsequent years. We lost good people to other projects and companies, we struggled to manage expectations from both internal and external stakeholders, and we were frustrated in our efforts to conclude an Impact Benefit Agreement (IBA) with one of the local First Nations. We tried communications and engagement tactics that worked well, a few that failed, and we were reminded of the adage that you can rarely satisfy all the people all the time. Polling suggests we had community support, and we faced no polarized opposition, so it seems reasonable to claim we had succeeded in efforts to manage potential risk to the mine development and had gained a “social license to operate.”

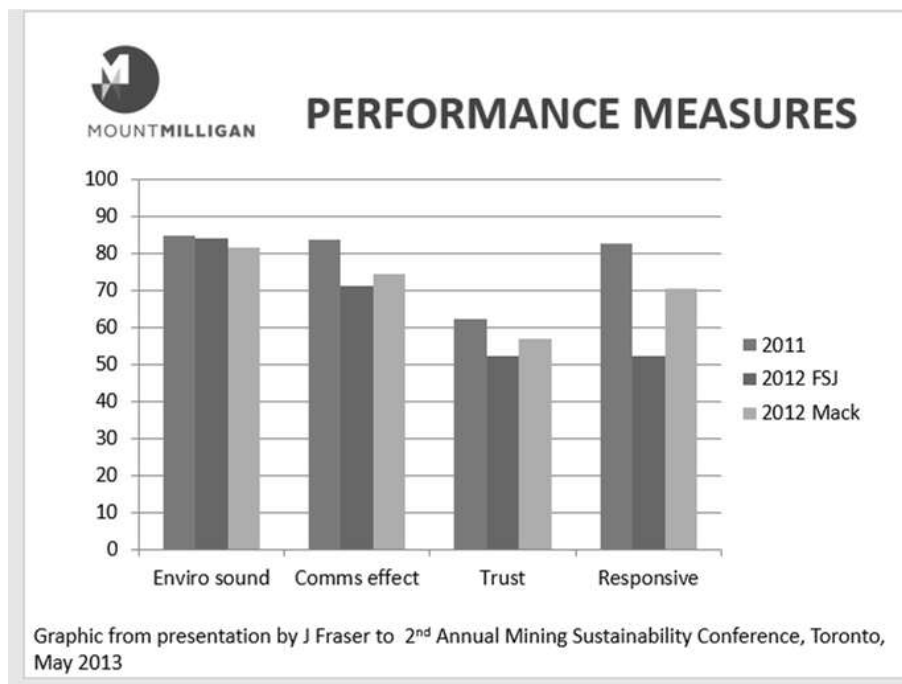


Figure 1.1 – Slide from the author’s personal archives showing results from community polling conducted to assess public perception of trust levels for Mount Milligan Mine. Polling respondents were residents of the two communities in closest proximity to the mine: Mackenzie and Fort St James. Respondents were asked to indicate their agreement with the following statements: Mount Milligan operates in an environmental sound manner; Mount Milligan communicates effectively within your community; The project is managed by people you can trust; The company is responsive to community concerns. Results were compared year-over-year with N= 2011 (250) and 2012 (293). In 2012, results were reported by community as opposed to an aggregate number. This was done to determine if trust levels were comparable in the two communities.

The most significant challenge that I faced was attempting to change the approach to CSR. In common with many other sectors, mining companies tend to adopt a traditional approach to CSR with a focus on philanthropy. This usually results in investments in causes important to someone in the organization or in the community. Redistribution of wealth in this manner is valuable and should not be discounted. However, while there will always be a role for this transactional approach to CSR, community donations treat social responsibility as a sunk cost and, when times are tough, as they were during the building of Mount Milligan, CSR budgets and staff are often cut to protect the company's bottom line. There are two additional challenges associated with philanthropic investment: one is that such policies can leave the company open to allegations that it is attempting to buy community favour; and the second is a view that it is not socially responsible to redistribute wealth that has been created by irresponsible practice (Hörisch, Freeman , & Schaltegger, 2014). This is an allegation frequently levied at the mining industry, which has earned a negative reputation for its adverse social and environmental impacts.

1.4 From “Tried and True” to New

When I started working with Thompson Creek, I felt Mount Milligan offered an opportunity to consider an approach to community relations and CSR that moved beyond philanthropy. I understood that goodwill investments are often the easy choice for mining companies looking to secure support, and these sorts of investments can begin to build trust with new stakeholders. Many communities in the Mount Milligan socio-economic region have significant needs that they are hard pressed to finance. Local service providers encouraged investment in daycare and medical clinics. Sports groups advocated for recreational facilities and

sponsorships for travel. Municipal leaders felt the mining company could address a regional housing shortage or provide funding for capital projects. All worthy causes. There is a definite appeal to investing in community wish lists: the resulting project is tangible and the community (and company representatives) can visit it, use it, and know that it was built by, or purchased with money from, a specific company. Yet I felt this “tried and true” way of buying support had created an unfortunate legacy: communities can subsequently struggle to finance the operating and maintenance costs of donated equipment and facilities. Four examples are offered to illustrate the conundrum that can be created when assessing the value of CSR initiatives.

1.4.1 The Zamboni

One of the community investment requests we received at Mount Milligan was to replace a local town’s ice arena cleaning machine, known as a Zamboni. The Zamboni had been donated by a previous corporate sponsor. The machine was not very old but was not working. Some research suggested that the machine, if properly maintained, should have lasted much longer. Further investigation revealed that the nearest maintenance shop for the Zamboni was hundreds of kilometres away. The Zamboni was not working because it had not been properly maintained. Buying the town a new Zamboni did not seem to be a wise investment.

1.4.2 The Cell Tower

It is important to note that there are significant opportunities for companies and communities to develop infrastructure that benefits both parties. For example, infrastructure that provides benefits to both mining company and community is the focus of a case study discussed in detail in Chapter Five. At Mount Milligan, we explored options for shared infrastructure and managed

to deliver several small projects. In one case, we contracted a supplier to install a cell tower to provide phone and internet service to the mine site and mandated that the tower also provide coverage on the forest service roads (FSR) in the region. (Driving conditions on the FSR were often a considerable risk: from limited visibility in the winter due to snow, and from dust from logging trucks that can make it impossible to see oncoming traffic during large parts of the spring and summer). In addition to the convenience of being able to remain within cell service, it could be argued that regional emergency response was enhanced by having cell coverage of the road network. We felt this shared infrastructure added value. As we did not publicize our role in securing cell coverage for the FSRs, the communities did not necessarily realize the company's role in the provision of this infrastructure. In other words, there was no associated "value" for the provision of the infrastructure. Nevertheless, ensuring that the cell tower had capacity to serve the community as well as the mine site was the responsible thing for the company to do.

1.4.3 The Recycling Centre

An example of traditional philanthropic investment was the decision taken by the previous mine owner's community relations team. Finding there was some community funding remaining in the budget at the end of the year, the team decided to donate money to a community wishing to build a recycling centre. There was no question this would be a useful facility for the community. Yet, the donation represented exactly the type of infrastructure investment I was advocating we avoid: infrastructure based on community wish lists and where ongoing operating costs and maintenance may impose a financial burden on the host community. Nevertheless, the investment was made. Less than a year later the recycling

centre burned down. The centre was rebuilt by the community, creating an opportunity for the Mount Milligan team to consider ways to make a different kind of contribution. At the time, there was no potable water at the construction site and the 1000-person work crew was generating thousands of empty water bottles every month. We donated these bottles to the new recycling centre and used the \$300 - \$1000/month of returned bottle deposit money to support local community groups. This created a stream of revenue that further funded our community investment program⁴. Our environmental engineer then proposed a further form of support. Trucks delivering materials to Mount Milligan were returning empty to Prince George, where the regional recycling sorting depot is located. We spoke to the trucking companies and determined we could negotiate a back-haul fee – a minimal cost that the company and recycling centre could share – to incentivize the trucking company to have empty vehicles stop in the local community. The trucks could pick up the centre’s recyclables and take the materials to the regional sorting centre. Not having to pay transportation costs, typically calculated based on the weight of the recycled material, would represent a significant cost saving for the local recycling centre. For the company, supporting the back-haul route, and associated cost, meant we could contribute to fewer truck trips through the community, reducing both environmental and social impacts.

⁴ The community investment program had terms of reference, funding guidelines and an application form that could be accessed in the company’s community offices, from a member of the community sustainability committee or via the project website, which received an average of 5000 unique visits each month during construction.

1.5 The Healthy Communities Legacy

I felt optimistic that we would be able to work with communities to find other points of intersection between the needs of business and the needs of the communities, and then collaborate to build strategic CSR programs that would benefit both. I saw the best opportunity to advance this agenda in a regulatory requirement mandating that the mine create a “legacy fund” to contribute to regional sustainability.

The regulatory agency, the BC Environmental Assessment Organization (BCEAO), had left the specifics of the legacy fund open, allowing the company to consider a range of different options. From the onset, the company saw the legacy fund as a community investment tool to complement established local hire, local procurement, and local training initiatives. A chance meeting with a former colleague in early 2011 led me to pick up a copy of the Canadian Council on Learning’s report on the country’s future literacy needs (Canada Council on Learning, 2008). Looking at the situation in British Columbia, I was shocked to learn that about 40 per cent of BC adults did not have the skills necessary to read a newspaper, fill out a work application form, read a map, or understand a lease (Statistics Canada and the British Columbia Ministry of Advanced Education, 2005). Twenty per cent of teenagers aged 15 to 19 – our future work force – no longer pursued a formal high school education. Fifty per cent of aboriginal students were not graduating from high school. In industries, such as mining, where safety is a critical performance indicator, research told us although 64 per cent of employers think that their employees understand vital health and safety information (provided as print or electronic reading materials), only 40 per cent of workers agree (Campbell, 2010). Mount Milligan’s training supervisor had worked with the regional college to develop programs for those who

might be interested in careers at the mine. There was a basic skills course to help students upgrade their math and science skills, and to learn money management and other life skills, as well as a mine certificate course. The company had also worked to develop a curriculum for a mill operators course and guaranteed all graduates an interview. But the government reports made me wonder if we could complement these efforts.

My colleagues and I began to ask about the root cause of issues such as drug and alcohol dependency, domestic violence, and low high school graduation rates. We started to think we should take a serious look at funding literacy. Not only to help build the capacity of those who might be future employees of the mine, and to address a critical skilled labour shortage in the industry, but also to leave a legacy in the community that supported a sustainable future. A program concept was drafted to embed literacy training into economic development, health and wellness initiatives, cultural, and youth programming. The legacy project would be an investment in people, helping to train potential employees, and building a very tangible “legacy” from the mine’s operations, beyond the significant contribution made through paying royalties and tax, job creation, and the use of local suppliers. Funding literacy is not a new idea. Our approach made this initiative different.

The proposal was to create two parallel streams of funding: one to a provincial literacy agency to support program development, the other directed to six communities in closest proximity to the mine. For the communities to access money, they would be asked to develop a three-year business plan with measurable objectives and to report on progress to Mount Milligan’s Community Sustainability Committee (CSC). The CSC was an advisory group made up of 16 regional representatives who met quarterly to offer advice on sustainability priorities

within the mine's socio-economic impact region. "Legacy" projects could include economic development to support post-mining business certainty. Health initiatives, environmental conservation, cultural programming, or sustainability planning, were other areas where legacy programs could be created. Of course, literacy could be delivered via a more traditional stay in school programming. Possible projects for the legacy program to support were endless. The key would be that the communities – not the mining company and not the provincial literacy agency – would choose the projects.

I was excited about this because the legacy program would see an investment in people, address a critical social need, support the region's sustainability, and the results could be tracked. Each funded project would set business objectives to measure success, plus we would be able to assess literacy rates year-over-year using the baseline provided by the provincial government. However, as we worked to secure endorsement for this idea, I spoke with community representatives accustomed to conventional infrastructure investments and philanthropic donations. Community leaders suggested that expectations for what our project would deliver and our plans for contributing to regional sustainability would not meet those expectations. I heard from elected officials and economic development officers in the region who questioned the need for literacy programming in their communities. Recognizing the stigma that can be associated with literacy – and the mental image of adult learners labouring away in dusty church halls or recreation centres – we tried rebranding our initiative: we stopped calling it a "Legacy of Literacy" and started calling it "The Healthy Communities Legacy". Yet we continued to hear from local authorities who told us that what their community needed and wanted was not what we were offering.

Funding innovation in literacy programming seemed to offer the proverbial win-win: a way for the mine to support community-based planning and sustainability strategies, and for the mining company to secure a qualified future workforce. It seemed a way that business could benefit society while simultaneously addressing the needs of the mine. I knew that we needed to earn community endorsement to make the “legacy” project a success. I also recognized that an unenthusiastic response from community stakeholders could erode company support for the concept. With the communities saying the “tried and true” approach of community investment by donation should be followed, it was not surprising that many inside the company suggested it would be more appropriate to write a cheque than continue to insist on a CSR approach that was not aligned with community interests.

As discussions on the legacy project were taking place in 2012, molybdenum prices were falling. At that time, molybdenum was the only commodity Thompson Creek Metals was producing, making it the sole source of revenue to offset escalating construction costs at Mount Milligan. A company-wide downsizing initiative was undertaken that saw jobs losses at both the company’s producing mines and head office. As a spokesperson for the company, I had difficult conversations trying to help community leaders and members of the media understand the company’s financial constraints. Our Community Sustainability Committee meeting in December 2012, was spent dealing with this issue and attempting to reassure our members that Thompson Creek remained committed to Mount Milligan. We stressed that we remained on track to deliver a project that would be a showcase of operational excellence and a valued partner in the communities in which we operated. Following the committee meeting, which had been held at the mine site, I was advised that my job was being eliminated. The rationale

offered was that since Mount Milligan had not lost any days to community opposition, and there were no issues at other operations, the cost of maintaining a dedicated CSR position could not be justified. This notion of CSR as a sunk cost that does not generate financial gain reflects an instrumental theory approach to CSR, which is discussed more fully in Chapter Two. In my case, I got lucky. I was retained as a consultant by the project team.

Following the mine opening in October 2013, a new mine manager and a new company president were hired. Both supported the communities' wish for conventional philanthropic investments. Today, the legacy program distributes quarterly donations, supporting a wide variety of worthwhile projects in the region. This transactional approach is endorsed by both the company and the communities, and appears to be meeting the expectations of both groups.

1.6 Transforming the Approach to CSR

During my tenure with Thompson Creek I had been invited to speak at several mining events where the feedback I received to the "legacy" concept from fellow CSR practitioners was positive. At one mining sustainability conference, the most prominent topic of conversation amongst my fellow speakers and delegates was the challenge of CSR. There was discussion about increasing incidents of mining-community conflict; declining trust levels; the frustration inherent in trying to gain consensus in situations with competing interests. While I was encouraged to realize I was not alone in questioning the effectiveness of traditional approaches to CSR, the conversation also made me start to think about the effectiveness of current approaches to engagement and social responsibility. Harvard economist Michael Porter has said that, "The prevailing approaches to CSR are so disconnected from business as to obscure

many of the greatest opportunities for companies to benefit society” (Porter & Kramer, 2006, p. 80). If Porter is right, and if the mining sector were to embrace an approach to CSR that linked business benefits to social outcomes, would there be less mining-community conflict? Could mining companies contribute to the long-term development of the communities that host their operations beyond the significant contributions made by tax and royalty payments, creating jobs, and the use of local contractors and suppliers? How could mining companies and communities work together to identify areas of mutual need and then develop programs that deliver both business and social benefit? It seemed to me there was an opportunity for mining companies to take a different approach to CSR: securing business benefits while also creating value in the communities surrounding mining operations. The points of intersection between what companies need and what communities need seemed easy to identify. And if the focus was on projects that contributed to the sustainability of the community, perhaps these projects would also help stakeholders to realize more substantive benefits from mining companies than philanthropy alone could deliver.

1.7 Statement of Intent

The intent of this research is to consider a central paradox in mining: despite a vast array of tools, voluntary codes of conduct, and regulation to support socially responsible behaviour, incidents of mining community conflict appear to be increasing. This seems to suggest that current approaches to CSR are not effective at meeting the needs of all stakeholders. The research seeks to determine if mining-community conflict could be reduced if companies embraced a more strategic approach to social responsibility, one that links business and social

outcomes. The research then explores the opportunities to collaborate and create shared value to advance the UN Sustainable Development Goals (SDGs).

Although I have focussed this chapter on the Mount Milligan experience, my interest in the topic of company-community conflict results from 15 years of professional experience working in CSR and stakeholder engagement in the extractives sector (mining, oil and gas, and forestry). During that time, I witnessed the establishment of the terms “sustainability”, “CSR”, and “social license to operate” within the corporate lexicon, reflecting a value shift on the part of business (Paine, 2003). Yet company-community conflict continues. The hypothesis of this research is that in today’s interconnected society, where information travels quickly via social networks, failing to meet community expectations constitutes a pressing business risk that must be managed strategically. My prediction is that mining projects are set to experience a level of scrutiny unheard of in past decades. This, in combination with changing regulatory and disclosure requirements, appear to be driving efforts on the part of mining companies to conduct business in a more socially responsible manner. But are these efforts delivering value for mining companies and communities impacted by resource extraction?

The research investigates the premise that there is both monetary and reputational value to investing in core social needs that intersect with business interests, thereby supporting an enabling environment for the long-term business success of communities that host mining operations. A new model to mitigate mining-community conflict based on implementing policies and practices that enhance the competitiveness of a company while advancing the economic and social conditions in associated communities is proposed. And a concept

presented that places various CSR approaches within temporal boundaries aligned to life of mine stages. Key research questions were:

- What types of CSR approaches should mining companies implement to advance sustainable development and deliver value to both the business and communities that host mining operations?
- Are there certain CSR approaches that should be taken at specific stages of the life of mining projects?
- Will a more strategic approach to CSR – one with parallel goals of delivering both business return and social benefit – reduce mining-community conflict?

1.8 Exclusions and Rationale

It is recognized that good corporate and political governance, as well as stable institutional frameworks (both nationally and regionally) are critical for ensuring that mining activities are carried out in a manner which generates the greatest good for the greatest number, respects indigenous rights, and protects the environment. The status of governance and institutional frameworks is not examined in this research, nor is resource nationalism (efforts by ruling governments to limit the operations of private companies and assert greater control over natural resource development⁵). The rationale for these exclusions is that the focus for this

⁵ Resource nationalism has a long history and there are a multitude of definitions for this term. This definition was proposed by Paul Stevens (2008). National oil companies and international oil companies in the Middle East: Under the shadow of government and the resource nationalism cycle. *The Journal of World Energy Law & Business*, 1(1), 5-30

research is on mining companies and the actions companies can take to mitigate mining-community conflict.

Also not examined in this research, is the role that civil society groups and non-governmental organizations (NGOs) can – or should – play in the effort to reform, or reframe, CSR. This is another area acknowledged as important but is only examined in the context of the potential for collaboration to abate mining-community conflict. This exclusion does not suggest that the work done by these groups is not of critical importance, rather, that the issue lies outside the scope of this study.

1.9 Design of Research Approach

From the onset of my PhD program, the overarching research question has remained constant: if mining companies and impacted communities work together to identify mutual needs, and collaborate to address issues, then will this shared approach reduce conflict and position social responsibility as a strategic business imperative? The answer to the question, detailed in the following chapters, has been informed by my professional experience within the mining industry, and from my research undertaken at the University of British Columbia. Highlights of the research journey are presented below.

In 2014, a paper I presented at the CIM Convention in Vancouver drew attention to the important roles innovation and interdisciplinary collaboration could play in the quest for sustainable mineral development and enhanced social performance (Fraser & Scoble, 2014). The research for the paper introduced me to several case studies of interest and stimulated the idea of conducting a more systematic investigation into incidents of conflict and co-operation between mining companies and communities. The preliminary results of the resulting media

analysis were presented at the Third International Future Mining Conference, where the paper (Fraser & Scoble, 2015) prompted an invitation from the editors of the AusIMM Bulletin to write a feature article (Fraser & Scoble, 2016). Condensing the idea into the 2500 words allocated for the article was a valuable exercise and helped to clarify my thinking and the positioning of the argument. I began to wonder whether mining personnel were being provided with the skills necessary to work effectively with communities and address social risk. This idea was explored in a paper presented at the Sustainable Development in the Mining Industry (SDIMI) conference held in Vancouver in June 2015, which was subsequently published in the Mongolian Mining Journal (Fraser & Xavier, 2015).

At these various conferences and sector events, I became aware that the Porter and Kramer terminology “creating shared value”⁶ – a central premise in my research proposal – was contested. Concerns were raised that the CSV idea failed to acknowledge trade-offs between economic and social value creation, and that not all situations are conducive to the “win win” approach that CSV appears to propose (Crane, Palazzo, Spence, & Matten, 2014). Leading social practitioners dismissed the idea as being too business-centric and, despite Porter and Kramer’s clear definition, I heard from many who seemed confused about the idea of finding the points of intersection between the needs of business and society and then exploring opportunities for collaborating to create economic value.

Most of my exposure during this time was to industry and mining academics. In the fall of 2016, I was privileged to be selected to attend the Alliance for Research on Corporate

⁶ This concept is discussed in detail in Chapter 2

Sustainability's (ARCS) PhD Academy at the Ivey School of Business. As the sole representative from the extractive sector, I found myself for the first time amongst peers whose views of mining were significantly different to mine. Critical questions were raised about the nature of conflict, the lack of trust in the mining sector, and the disrespect shown by mining companies for human rights, the environment and society. One of the faculty, Andrew Crane, was a co-author of an article that offered a scathing critique of Porter and Kramer's idea of creating shared value (Crane, Palazzo, Spence, & Matten, 2014) – discussed in more detail in Chapter Two. While I remained convinced of the inherent value in CSV, I became conscious that the terminology meant different things to different people. I wondered if it might be worth exploring how “creating shared value” could be used as one strategy to drive progress on the United Nations 2030 Sustainable Development Goals (SDGs)⁷. The SDGs agenda is ambitious and an economic strategy will be needed to address many aspects of each of the 17 goals.

Very quickly I could see that the SDGs provided a relevant frame for the study. Groups such as the World Economic Forum (WEF) were proposing ways that mining could advance the SDG agenda, and socially responsible leaders, including members of the World Council for Sustainable Business, endorsed the initiative. I used my position as a panel moderator at the 2016 Mining and Communities conference to explore the linkage between the SDGs and mining with conference delegates (Fraser, 2016). I refined the concept for an October 2016

⁷ On September 25th, 2015, 194 countries plus global civil society organizations adopted a set of goals to “end poverty, protect the planet, **and** ensure prosperity for all” as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.
<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

presentation at the World Mining Congress (WMC), looking specifically at those SDGs where mining could make a significant impact if companies worked in collaboration with others.

I valued that the SDGs had been endorsed by companies, communities, governments, civil society, and development organizations, but I was concerned that the SDGs do not offer a process for project planning and implementation. I remained convinced of the opportunity offered by the CSV idea and, in December 2016, attended a course at Harvard on creating shared value, offered by Professors Michael Porter and Mark Kramer. I was hoping for clarification on how Porter and Kramer viewed the concept five years after its introduction, and I wondered if they saw an alignment between the SDGs and CSV. The session answered my questions related to the theory and practice of CSV, and established that the leading CSV authorities are actively pursuing opportunities offered by the SDGs. The positive reception from Porter and Kramer on my research proposal and the Cerro Verde case study, discussed in Chapter Five, was immensely valuable.

My research journey started and finished by seeking to determine if companies and communities were to work together to address social problems that also affect mining operations, would this more collaborative approach reduce mining-community conflict? In other words, if CSR is established within mining companies as a strategic function, one that has a clearly articulated business case, will that stimulate new opportunities for companies, civil society organizations and governments to collaborate in addressing social problems (Porter & Kramer, 2006) and thereby reduce mining-community conflict? With the announcement of the United Nations 2030 SDGs in September 2015, the research was reframed to consider the opportunities presented by the SGDs to foster collaboration on a common agenda.

The research began with a systematic literature review, which is described and reported upon in Chapter Two. The literature review encompassed the various definitions of several contested terms: corporate social responsibility, social risk, and sustainability. The origins and evolution of corporate social responsibility were explored, past research to classify social responsibility initiatives was investigated, and critiques of diverse options examined to understand the heuristic and theoretical approaches presented in the literature. The literature on social risk in the mining sector was reviewed, as well as literature on community relations, stakeholder engagement, and social license to operate. Next, the links between CSR and sustainability were explored and the evolution of the business case for social responsibility and sustainability assessed. A CSR continuum is introduced in Chapter Two. This plots CSR from transactional CSR (one way giving such as philanthropy), transitional (doing well by doing good), and transformative CSR (collaboration to deliver business and social benefit). The opportunities afforded by transformative CSR are the primary focus of this research.

The literature review became an iterative process, with initial findings reconsidered at various stages throughout the dissertation. This approach helped to ensure exposure to current ideas and articles published during the study period, and provided a means to evaluate findings from both the quantitative and qualitative stages of my research. The literature review led to the decision to employ a multiple methods research approach, combining quantitative and qualitative forms (Creswell, 2009).

The quantitative portion entails an analysis of mining community conflicts from 2012 – 2015 as reported in the international business media. The time frame was selected to provide two years of overlapping data with similar work done by the International Council of Minerals

and Metals (ICMM) and extend the research period to the end of 2015. This provided the data to test the hypothesis that incidents of serious or sustained conflict increased from 2012 to 2015 and is described in Chapter Three. Media coverage was hand-coded using a system adapted from conflict literature to select those situations deemed as serious or sustained conflicts, and a document analysis of a sub-set of the conflict situations was employed to verify the results. This data was then used to test the premise that current approaches to CSR, grounded in philanthropy and other forms of transactional stakeholder engagement, are failing to deliver long-term benefits to communities that host mining operations.

The results of the media analysis prompted a closer investigation into the role of trust in developing effective social responsibility strategies. Chapter Four examines several examples of projects, identified via the literature review, where companies adopted a more strategic approach to CSR – one that delivers benefits to both business and society. A characteristic shared by the projects examined was collaboration between the mining company and the community to address issues of critical importance to both. The opportunities for mining to advance progress on the SDGs is then considered, providing context for a more detailed case study, described in Chapter Five.

Understanding of the causes of mining-community conflict, distilled from the media analysis, was central to the design of a qualitative, theory-building case study (Eisenhardt & Graebner, 2007). The case study, described in Chapter Five, explores in-depth a practical application of a strategic approach to social responsibility, incorporating the views of multiple stakeholders.

1.10 Research Contribution

To date, there is no research specifically examining the use of strategic CSR to reduce mining company-community conflict and support the success of both the mining project and the community that hosts the extractive operation. There is also a paucity of research on when to use various CSR approaches to build trust and earn sufficient credibility to design collaborative approaches to secure sustainable development. My research aims to contribute to scholarly research in the following ways.

1. Mining-community conflict has been investigated by others but it appears this has not been done using the international business media as the primary data source. In addition, the use of an established scale for measuring conflict and cooperation differentiates this work from previous research into mining-community conflict.
2. The research furthers discussion on conflict and sustainable development in the extractive sector, and proposes an issues-centred engagement model. It is suggested that placing one of the SDGs at the centre of discussions about what mining can contribute to communities will identify opportunities to employ a “creating shared value” strategy.
3. Building on the findings of my research, I propose a model for CSR that is temporally bound and aligned with the stages of mine development from exploration, through construction and operations, to closure. There has been very little research into which CSR approaches are most appropriate at specific stages of the mining life cycle, making this a unique contribution.

In applied terms, the results should support mining companies wishing to transform current risk management and social responsibility practices. Further, this may extend to government and NGOs interested in collaborating with business to achieve the 2030 SDGs.

The following chapter provides a review of the literature, exploring the contested nature of some of the key concepts referenced in this research and providing a context for the investigation into CSR and its applications in the mining sector. The chapter reports on the evolution of corporate social responsibility and the link between building a business case for CSR, and the potential for business to generate sufficient momentum to secure the 2030 SDGs.

Chapter 2: Defining and Applying Corporate Social Responsibility: Evidence to Support CSR as Strategy

2.1 Introduction

The purpose of this PhD research is to consider a central paradox in mining: although the availability and use of tools to support social responsibility is on the rise, incidents of mining-community conflict also appear to be increasing. The research investigates whether the mining sector can transform social responsibility by moving from transactional engagement to a more strategic, or purposeful, approach. “CSR is strategic when it yields substantial business related benefits to the firm, in particular by supporting core business activities” (Burke & Logsdon, 1996). As strategy, CSR goes beyond maximizing short-term shareholder value to facilitate sustainable development in communities that host extractive operations. Of specific interest is the ways in which mining companies and communities could work collaboratively to identify areas of mutual need and then develop programs delivering both business and social benefit. The research proposition is that ensuring resource wealth supports long-term sustainable development could be a way to foster collaboration on topics of mutual interest and, by delivering projects that have value for society, potentially reduce mining-community conflict.

2.2 Literature Review Methodology

Figure 1.1 illustrates the iterative approach used in the literature review, begun in 2014 and revisited through 2015 – 2017. Key words for the literature search included: mining-community conflict; stakeholder engagement; CSR; reputation; environmental, social and governance (ESG); social license; social risk; and trust. The literature review findings,

summarized in this chapter, fall into four central topics, which inform the research: theoretical perspectives on CSR and the definitional debate; the evolution of social responsibility; approaches to CSR to create value and support sustainable development; and the intersection of social responsibility and social risk management.

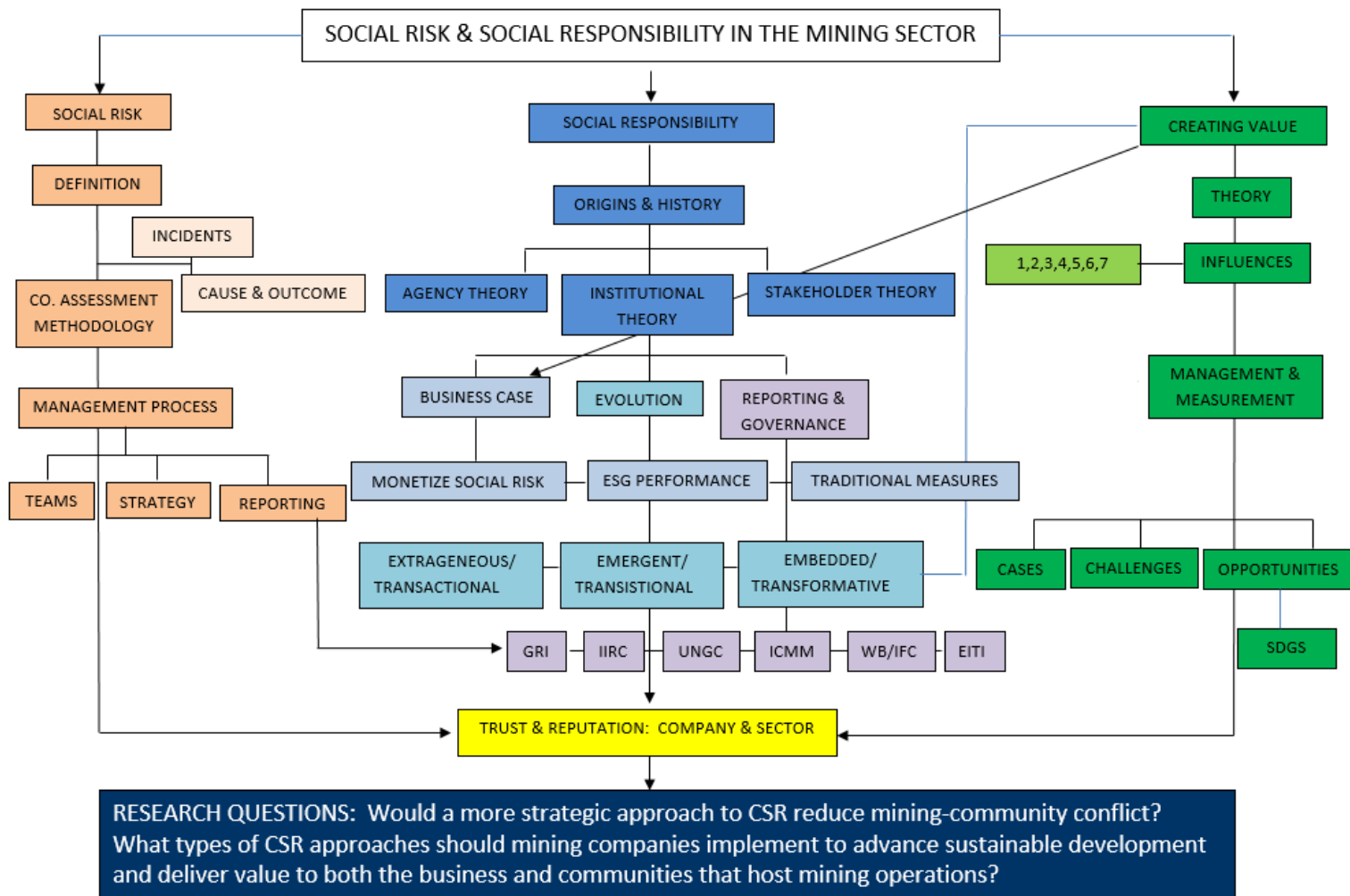


Figure 2.1: Flow chart adapted from Creswell (2009) and Marshall & Rossman (1995) to illustrate the systematic and sequential approach to map the literature review. Three key terms were used to locate relevant scholarly work. Literature within each stream was evaluated then organized to devise dimensions, develop questions, and draw conclusions for investigation in the research. Influences noted in the creating value stream refer to: 1. Blended value 2. Sustainable value 3. Bottom of the pyramid 4. Triple bottom line 5. Sustainable development 6. Conscious capitalism 7. Capitalism 2.0 .

2.3 Theoretical Perspectives of CSR

The principal frameworks relevant to the discussion of CSR are anchored in agency, institutional, and stakeholder theory. Agency theory views CSR as an expense that reduces profits for shareholders. American economist Milton Friedman (1970) is perhaps the most famous advocate of CSR as an agency problem representing conflict between shareholders and managers. Prominent management scholars McWilliam and Siegal (2011), also endorse agency theory but others contest this view. Aguilera and Jackson (2003) argue that institutional theory is a more useful frame for CSR as it addresses stakeholder interdependencies, which they believe are essential to understanding CSR. Campbell (2007) is another who endorses institutional theory arguing that other theoretical frames do not consider the conditions that motivate corporations to act in a socially responsible manner. He draws attention to the need to differentiate between rhetorical CSR and substantive action. And to acknowledge that CSR is a dynamic process shaped by globalization, stakeholder activism, and political decision-making, which must be addressed institutionally (Campbell, 2007).

Despite the sound arguments advanced by scholars advocating for agency or institutional theory, this research considers CSR from the perspective of stakeholder theory, introduced by R. Edward Freeman in 1984. Freeman's theory focusses on managing stakeholder relationships (as opposed to stakeholder management, which he feels implies the manipulation of others), and positions CSR as an investment consistent with value maximization and risk mitigation (2010). Corporate "stakeholders" are defined as any person, group or organization that can place a claim on a company's attention, resources, or output (Kytle & Ruggie, 2005). In Freeman's view, good business consists of creating value for multiple

stakeholders including customers, employees, suppliers, communities, and financiers, and requires ethical leadership (Freeman, 2011).

The four major categories within stakeholder theory are described by Hörisch et al. (2014) and summarized as follows.

1. Descriptive empirical stakeholder theory investigates how companies are managed and how they identify relevant stakeholders. Mitchell, Agle and Wood (1997) are proponents of this approach and their tool for stakeholder mapping, using a Venn diagram to plot stakeholders by power, urgency, and legitimacy (P.U.L), remains popular amongst practitioners.
2. Instrumental stakeholder theory evaluates the effectiveness of stakeholder management in achieving corporate objectives using economic theory, behavioural science, and ethics to illustrate how trust and trustworthiness can create competitive advantage (Jones, 1995).
3. Normative stakeholder theory is linked to the discussion of the purpose of business and is the moral justification for stakeholder theory. Normative theory is anchored in the belief that stakeholders have legitimate interests in corporate activity and that those interests have intrinsic value. It has been observed that descriptive, instrumental, and normative aspects of stakeholder theory are distinct yet inter-related, and that normative theory is fundamental (Donaldson & Preston, 1995).
4. Integrative stakeholder theory argues that descriptive, instrumental, and normative aspects of stakeholder theory are inextricably linked. It is this view, first advanced by Freeman for analyzing the role and relationship of business and society, that has emerged as a dominant paradigm of CSR thinking and is the most frequently used approach in social,

environmental, and sustainability management research. Freeman, and other followers of integrative stakeholder theory, stress the importance of avoiding trade-offs in favour of generating mutual interests between diverse groups. Integrative stakeholder theory acknowledges the difficulty of avoiding all trade-offs, yet stresses the objective should be creating value for all (Freeman, 2010).

Stakeholder theory is a particularly relevant frame for the portion of this research examining the alignment between CSR and sustainable development. Freeman (2010), as well as Kolk and Pinkse (2007), Porter and Kramer (2011), and others, argue that social and environmental issues must be embedded in a company's business model. They reject the notion of "residual" CSR, exemplified by philanthropy and compensation, advocating instead for sustained value maximization for society. Of note for this research is the idea integral to stakeholder theory that a long-term perspective is required to build effective stakeholder relations, and that these relationships are critical to building intangible assets such as social capital⁸ and reputation. The concept promotes business and ethics as fundamentally interlinked, meaning profit seeking can create mutual benefits for business and society, and can finance sustainable development.

2.4 Definitions

After selecting stakeholder engagement as the theoretical frame, the next step in the literature review was to explore the multiple definitions of "corporate social responsibility" and clarify

⁸ Social capital refers to social networks and the associated norms of reciprocity. - See more at: http://oecdobserver.org/news/archivestory.php/aid/1215/Bowling_together.html#sthash.fAvagIFm.dpuf

how the term will be used in this research. The literature suggests a central concept: that CSR reflects social imperatives and social consequences of business success. Although a seemingly straightforward premise, the idea has resulted in an abundance of definitions, little consensus about what CSR means, and uncertainty about how the term should be defined. As we will see in the section addressing CSR approaches, there is also considerable debate about the effectiveness of some CSR initiatives. More than a decade ago, questions were being raised about the efficacy of CSR in the mining sector, with “. . . mounting evidence of a gap between the stated intentions of business leaders and their actual behaviour and impact in the real world” (Frynas, 2005).

Archie Carroll (1999) writes that definitions of CSR began appearing in academic literature in the 1950s, which he classifies as the modern era of CSR. Definitions expanded rapidly in the 1960s and 1970s, and have continued to develop in recent years. Carroll believes the Committee for Economic Development (CED) made a landmark contribution to the concept of CSR. In 1971, the CED echoed French philosopher Jean Jacques Rousseau (1712-1778) when claiming there is a social contract between business and society; that “business functions by public consent and its basic purpose is to serve constructively the needs of society – to the satisfaction of society” (Carroll, 1999, p 274). This concept was endorsed in the mid-1970s, when an emphasis on corporate social performance (CSP) emerged, culminating in a definition offered at the turn of the 21st century positing that CSR incorporates “actions that appear to further some social good, beyond the interest of the firm and that which is required by law” (McWilliams & Siegel, 2011).

Carrol himself developed a four-part concept of CSR, suggesting “The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time” (1999, p. 283). Carrol’s CSR definition has proven to be the most durable and widely cited (Visser, 2006). Scholars including Matten and Moon (2008), continue to evolve the concept by noting that the meaning of CSR is nationally contingent, essentially contested, and dynamic. CSR must also consist of clearly communicated policies and practices that reflect business responsibility for the wider societal good, and which understand/incorporate different national backgrounds and priorities (Matten & Moon, 2008, p. 405).

In his 2008 analysis of 37 CSR definitions, Dahlsrud stresses that while there is ongoing disagreement about what constitutes the social responsibility of business, the concept of CSR is well established. He notes that business has always had social, environmental, and economic effects, has been aware of its stakeholders, and has dealt with regulation. He argues that the challenge for business is not to define CSR but rather to understand how CSR is socially constructed in a specific context, and how to ensure contextual needs are incorporated to business strategy (Dahlsrud, 2008). One of the popular recent definitions suggests that CSR “goes beyond philanthropy and compliance to address the way companies manage their economic, social, and environmental impacts and their stakeholder relationships in all their key spheres of influence: the workplace, the marketplace, the supply chain, the community and the public policy realm” (Kytte & Ruggie, 2005, p. 9). A good overview of the contested and multi-faceted nature of CSR is provided by Orlitzky, Siegal and Waldmann (2011), who argue that economic definitions of CSR have the greatest potential. The view that business and society are

interwoven, rather than being distinct entities, is a central tenet of this research and provides a rationale for integrating social concerns to business operations and interactions with local stakeholders.

Included within the discussion of the appropriate definition of CSR is the work of those who argue for corporate responsibility (CR), rather than corporate social responsibility. CR is defined as a “cluster of a firm’s policies, programs and outcomes that are beyond the requirements of extant law” and which goes beyond social initiatives to encompass all corporate responsibilities (Griffin & Prakash, 2010, p. 179). Another common term, which overlaps with CSR, is corporate citizenship (CC) introduced in the early 2000s - mainly at the instigation of corporate actors - and which emerged as a prominent term in the management literature dealing with the social role of business (Matten & Crane, 2005).

Another contested term that will be positioned as a complement to CSR is sustainable development. Sustainability, along with procedural fairness, legal and regulatory compliance, and transparency, is recognized within this research as a central tenet of CSR. For purposes of clarity, this research uses the Brundtland definition (the first and the most commonly cited): sustainable development is "development which meets the needs of current generations without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 8). It will be argued that CSR in the mining sector should encompass sustainability, as it is an area of mutual interest for companies, communities, regulatory agencies, governments, indigenous peoples, and other interested parties. The opportunities for collaboration arising from the points of intersection between companies and communities are explored further in this dissertation.

Several other aspects related to the social responsibility of business have been advanced in recent years and are of potential significance for this research. One is the triple bottom line concept developed by John Elkington, a frame that raised the profile of social and environmental concerns. Elkington coined the term in 1994 and developed it further in his 1997 book, *Cannibals with Forks*. The triple bottom line encourages companies to consider the full costs of doing business: the traditional bottom line of profit, plus a measurement of social and environmental performance. The three “P”s of the triple bottom line are therefore profit, people, and planet. The idea was further developed by Andrew Savitz and Karl Weber (2013) to illustrate how profitability can merge seamlessly with common good, a concept aligned with the strategic approach to CSR investigated in this research. To determine the most appropriate definition of CSR for use in this research, the next step in the literature review was to investigate the evolution of the concept and categorize contemporary approaches.

2.5 The Origins and Evolution of Corporate Social Responsibility

There is a long history linking – or lamenting – the tie between industry and society. In *The Theory of Moral Sentiments*, published in 1759, Adam Smith introduced the notion that an “invisible hand” guides business (albeit unintentionally) to the benefit of society (Smith, 1982, p. IV 1.10), and a practical example of early CSR comes from Britain in the 19th century. George and Richard Cadbury, the two brothers who ran the famous chocolate company in the late 1800s, believed business had a responsibility to address social issues. The founders’ philosophy that business must benefit society was embraced by George’s son, Edward Cadbury, who set out to prove that social investments could “be a financial success, and not merely an act of philanthropy” (qtd. in Browne, Nuttall, & Stadlen, 2016, p. 24) In 1879, the Cadburys moved

production from the confines of Britain's industrial cities to the countryside. In so doing they achieved a business objective (the ability to expand beyond the limits of restricted factory land allocations) and a social purpose (removing employees from the appalling living conditions of inner city slums). Another early example, also from Victorian England, is offered by William Lever who invented Lifebuoy bar soap. He then introduced a hygiene program using Lifebuoy that reduced infant mortality in Britain. Today, Lifebuoy is produced by Unilever, the successor company to Lever Brothers and the company that runs the largest hand-washing program in the world. The initiative to change the hand-washing behaviour of people living in Asia, Africa and Latin America reaches half a billion people and is reducing the number of children under the age of five who die every year from water-borne illness (Business and Sustainable Development Commission, 2017). Unilever remains a company that embodies the idea that success requires companies to create both economic and social value to serve communities that sustain them. The company has secured a leadership position in the quest for sustainable development by recognizing that sustainability requires a long-term perspective. When current chief executive officer Paul Polman was appointed to his post in 2009, he discontinued quarterly reports and earnings forecasts, delivering a message to shareholders that the company would be building a long-term value creation model, now known as the Sustainable Living Plan.

Despite early examples of business working to do well by doing good, in 1970, American economist, Milton Friedman, who would win the 1976 Nobel Prize for Economic Science, reprimanded corporations for wrapping themselves in "the cloak of social responsibility" and making financial donations or allocations without concern for shareholder value maximization. In a seminal article in the *New York Times Magazine*, Friedman declared,

"there is one, and only one, social responsibility of business – to use its resources and engage in activities designed to increase its profits" (Friedman, 1970). Friedman never changed his stance on CSR and, as noted earlier, some still endorse his agency view of CSR. Yet by the mid-1980s, there was a growing feeling that corporations should provide not just jobs and tax revenue, but that they should also act in a more responsible manner: mitigating impacts and sometimes fixing the environmental mistakes of predecessors; helping to solve community problems via investment; involving the public in decision-making for issues with community impact; and addressing social problems (Paine, 2003).

The 1980s were also a decade when the concepts of corporate social performance, corporate citizenship, and business ethics began to influence academic research on the notion of CSR. This was when Peter Drucker introduced the idea that business ought to convert its social responsibilities into business opportunities – to turn a social problem into an economic opportunity and economic benefit (Carroll, 1999). Drucker's idea is reflected in subsequent decades in the work of influential thinkers on topics including blending value (Emerson, 2003), the bottom of the pyramid (Collier, 2008), corporate strategies to serve the poor (Prahalad, 2006), sustainable value (Hart, 1997), the triple bottom line mentioned previously (Elkington, 1998), sustainable growth (Savitz & Weber, 2013), social innovation (Kanter, 1990), and conscious capitalism (Schwerin, 2012) or conscious business (Mackay, 2011). These streams of academic thought were foundations for new terminology — creating shared value (CSV).

Michael Porter and Mark Kramer introduced CSV in a Harvard Business Review (HBR) article in 2011, where they advocated for companies to create measurable business value by identifying and addressing social problems that intersect with company business. The concept

is a move away from the traditional philanthropic approach (where companies donate money to charitable groups, sponsor community initiatives and support good works and social issues not directly impacted by the business), towards an approach that creates value for both industry and society (Porter & Kramer, 2011). In the words of Mark Kramer, “Shared value is much more about corporate strategy; it’s about identifying the issues that are truly material both to the company’s economic performance and to the social and environmental impact” (Economist Intelligence Unit, 2014). Executives who base their CSR decisions on the principle of “shared value” believe that it constitutes a business imperative which, when aligned with the strategic goals of the company, benefits both the firm and its stakeholders, including shareholders. (It is important to acknowledge that it may not always be possible to find win-win solutions. There are likely to be situations where the trade-offs required to achieve a “win-win” outcome will not be acceptable to all the parties whose participation is required).

It is not only academic thought that shapes CSR. One of the drivers for corporate social responsibility in the late 20th century was the rising influence of NGOs, social movements, and activist investors who mobilized to encourage corporate boards to act in a more socially responsible manner. NGOs have been around for generations but experienced a significant power shift in the 1960s and 70s when a new, largely secular, and increasingly activist group of players emerged: for example, Amnesty International and the World Wildlife Fund were launched in 1961; Greenpeace was born in Vancouver in 1971. These groups pressure corporations to act in more socially responsible ways and are proficient at using the media as a conduit to influence public opinion and public policy. As Campbell (2007) notes, the media

plays an influential role as a corporate watchdog, keeping the public and policy makers informed, and challenging corporate behaviour with the constant threat of public exposure.

Online connectivity is another factor that influences CSR. Stakeholders now have easy, instant access to information via the internet, enabling networks to be built and supporting the sharing of perspectives regardless of how isolated a community may be geographically.

Connectivity increases awareness of past and present activity by mining companies – knowledge that can exacerbate conflict and erode trust (Triscitti, 2013).

All these factors played a role in making CSR a concern for business, a tenet of managing social risk (Bowen, Newenham-Kahindi and Herremans 2010), and a driver in the desire to build collaborative relationships that address social problems. By 2008, CSR and sustainability were established as a legitimate part of business activity (Barnett, Darnall, & Hustad, 2015) yet approaches to CSR continue to vary.

2.6 Approaches to CSR

“A central paradox of [CSR] literature is that while there is a very large number of suggestions as to what organizations should do, there is very little empirical evidence of what works and when” (Bowen, Newenham-Kahindi, & Herremans, 2008). In many sectors, including mining, CSR’s “rhetorical infrastructure” is well established (Slack, 2012). Concurrent with the academic debate about the relative value of CSR, mining companies and their stakeholders have been implementing a vast array of initiatives to foster company-community relationships and measure performance. (These developments in the global mining sector are chronicled by Dashwood 2014 and discussed more fully in the next chapter).

In 2008, Matten and Moon published what many scholars cite as a seminal article addressing the differing approaches to CSR. They anchor their argument in institutional theory and label the methods as explicit and implicit. Explicit are those corporate policies that “combine social and business value and address issues perceived as being part of the social responsibility of the company” (Matten & Moon, 2008, p. 409). Implicit programs are those which reflect “corporations’ role within wider formal and information institutions for society’s interest and concerns” (Ibid, p. 408). Stakeholder engagement theory also segments CSR approaches in a comparable manner, often using a continuum that moves from one-way investment to two-way stakeholder engagement.

The three common approaches are illustrated in Figure 2.2, which groups the dominant CSR approaches as residual or value driven. Hörisch et al. (2014) define residual CSR as “add-on” CSR and are amongst the scholars advocating for business to be reconceptualized by making CSR, and sustainable development, strategic business functions. The view that to create real value for stakeholders, and to contribute to sustainable development, ESG issues must be linked to the core business of the company is shared by Freeman et al (2010), Kolk and Pinkse (2007), Porter and Kramer (2006) and other leading management scholars. Each CSR approach is described briefly below.

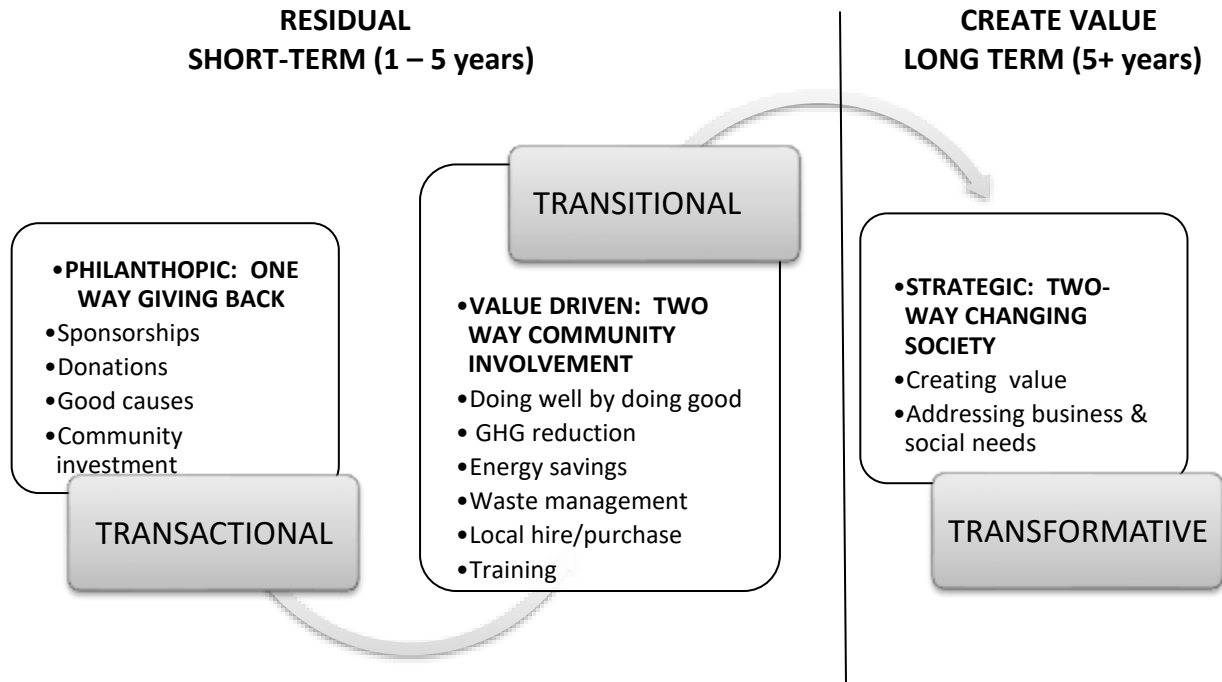


Figure 2.2.- The CSR continuum moving from transactional engagement through transitional engagement and arriving at transformative CSR. Adapted from “Strategy and Society: The link between competitive advantage and corporate social responsibility” -- Michael Porter & Mark Kramer, HBR, Jan-Feb 2011 and Network for Business Sustainability’s Engaging the Community: A Systematic Review Sept 2008. Terminology also reflects that of the International Association of Public Participation. Time frames reflect personal, practitioner experience.

CSR APPROACHES USING THE EXAMPLE OF A PANDEMIC HEALTH CONCERN		
TRANSACTIONAL	TRANSITIONAL	TRANSFORMATIVE
Donation to charity	Fund collaborative: research	Behavioural change initiative
No stakeholder engagement	Limited stakeholder engagement	Integrated stakeholder engagement/program ownership
Limited strategic relevance for business	Strategic relevance recognized	CSR is strategic imperative: impact of disease is recognized for both business (costs for lost productivity, insurance premiums, human resources, recruitment, training, etc.) and society
No correlation between money spent and business success	Little correlation between money spent and business success	Address macro-economic conditions to benefit business & society

Table 2.1 CSR approaches within the continuum. Example illustrating how companies adopting different CSR approaches might approach dealing with a pandemic, such as HIV/AIDS, which is discussed further in Chapter Four.

Transactional engagement provides information or resources to a community through arm's length transactions. Philanthropy, employee volunteerism, and community investment are three examples of transactional, or one-way, engagement. This approach is best described as traditional CSR, whereby companies redistribute wealth by investing in initiatives and infrastructure that community stakeholders view as important but that has little relevance to core business. For example, swimming pools, day care, medical equipment, and schools, provide many opportunities for philanthropy. Investing in transactional CSR has a strong appeal: opportunities are brought forward by the community; there is a short-term focus (typically one to five years) which allows the transaction to be executed and disclosed to stakeholders quickly, meeting a common objective of shareholders looking for short-term financial reports.

There are four principal challenges associated with transactional CSR. One issue relevant for the mining sector is the belief that companies should not redistribute wealth created via irresponsible practices – in other words, attempting to compensate communities for environmental and social impacts arising from deficient performance standards at mines does not offset the impact (Hörisch, Freeman , & Schaltegger, 2014). The second challenge encompasses a cluster of related issues: investment based on community wish lists results in chasing moving targets; the investment may only fulfil the expectations of a small minority; and philanthropy can create situations where the community cannot afford the annual operating costs of the facility built by corporate sponsorship (Rodríguez, Montiel, & Ozuna, 2014) The third challenge is encountered when attempting to measure the return on philanthropic investment: money spent in a community is not a true metric of value – for while it is easy to

quantify outputs (number of organizations sponsored, number of people who attended company-funded events, etc.) it is difficult to measure outcomes, such as transformative social change, from philanthropy. And finally, attempting to build relationships based upon transactional CSR may increase the risk of conflict: both as stakeholders compete for funding, and because the more vocal and vociferous the community, the more attention and money it receives from company officials, who tend to respond more immediately to aggressive demands and threats versus polite requests (Zandvliet, 2004).

Despite challenges, transactional CSR may be helpful in creating a climate of awareness for the company in the community, and building the trust required to move to more collaborative partnerships. A community representative attending the 2015 Sustainable Development in the Mineral Industry (SDIMI) conference shared her view that in her community mining companies are not trusted. For this reason, citizens question partnerships with company representatives whose tenure on the project may be short. From her perspective, the community was much better served by securing corporate donations: the community could deposit the money and use it as they deemed appropriate. This is an important consideration for those tasked with building CSR programs. As the SDIMI delegate noted, communities have an expectation that wealth from resource extraction should be redistributed via philanthropy and may be unwilling to abandon it, especially before trust is built with company representatives. This view aligns with my personal experience as a CSR practitioner and leads to a hypothesis, explored in Chapter Six, that transactional engagement is a necessary step on the path to move a company, and its stakeholders, towards more collaborative engagement. For mining projects, which can span several decades from

exploration to reclamation, philanthropy and other forms of transactional CSR may be an entry point to build the trust needed to undertake collaborative projects that aim to change society.

Transitional CSR – the second stage in the continuum – is characterized by two-way communication, consultation, and collaboration, and sees companies invest in projects that yield some benefit to both the business and the community. This type of CSR, sometimes described as “doing well by doing good” (Aguilera, Rupp, Williams, & Ganapathi, 2007) may be viewed as a more strategic approach than pure philanthropy as there is a link between the mining company’s business and society. Once again, these initiatives tend to have a short-term focus, delivering reportable results within one to five years. Some performance optimization initiatives may be continued throughout the life of mine (LOM). This has led to the observation that typical examples of transitional CSR – local hiring and training, regional procurement, emissions reduction, energy efficiency, waste management, and programs that enhance performance – should be classified with other operational improvement costs. The premise being that the results have limited ability to improve stakeholder relations and therefore should not count as CSR (Barnett, 2007). A further criticism of the transitional approach is that companies may report progress on issues such as greenhouse gas reduction (GHG), recycling, local procurement, local hire, energy conservation, and community engagement, without changing the underlying business practices that cause environmental and social degradation (Stubbs & Cocklin, 2008). Nevertheless, in a comparable manner to transactional engagement, it will be suggested that there is a time and place in the mining cycle when transitional CSR activities add value.

The third approach is the concept of transformative CSR – creating value for both the mining company and the community. According to McWilliams and Siegel (2011), Stanford scholar, David Baron was the first to refer to “strategic” CSR as a means to capture value for the firm. McWilliams and Siegel build upon Baron’s idea to introduce their own definition of strategic CSR as “any responsible act that allows a firm to achieve [sustainable competitive advantage] regardless of motive” (2011, p.1481). Motive is a consideration because research suggests that when CSR initiatives are strategic, linking a company’s core purpose to social issues, there is increased likelihood that stakeholders will regard the CSR programs, with potential for positive social impact, as authentic initiatives rather than simply as greenwashing (Mazutis & Slawinski, 2015). Greenwashing is a pejorative term that implies CSR activities ignore the adverse impacts that mining can have on society and are little more than public relations. Since transformational CSR is anchored in strategy, results can take longer to achieve. This is due to the need to prioritize projects aligned with core business, and to find and recruit partners to deliver the projects, which requires trust. Mining projects, where entirely different teams of people are often used to find, then build, then operate the mine, are particularly susceptible to changes in the social chain of custody. Changes in company personnel can erode trust held by community stakeholders, and can also cause CSR initiatives to be re-evaluated, adjusted, or abandoned. The social chain of custody challenge is discussed further in Chapter Four.

2.7 What’s in a Name?

In 2011, economist Michael Porter and his colleague Mark Kramer published an article in the Harvard Business Review entitled “Creating Shared Value: How to reinvent capitalism – and

unleash a wave of innovation and growth.” In the article, they introduce the term “creating shared value” (CSV) as integral to a company’s profitability and competitive position. Further, they make the case that CSV should supersede CSR in guiding company investment in communities. Porter and Kramer endorse the view that much CSR is transactional, focussing principally on reputation, with only a tenuous connection to a company’s core business. The CSV terminology was new, however, as noted earlier, other scholars and business leaders have been endorsing a strategic approach to CSR – one that links CSR to business strategy – for decades. Porter and Kramer’s article stimulated debate about the role of CSV and CSR, and the HBR article received positive reception in academic literature. However, implementation of the shared value concept remains limited. In the fall of 2013, The Economist Intelligence Unit surveyed 285 senior executives on their approaches to sustainability and plans to explore new business models to ensure long-term sustainability. The report concludes that a handful of companies are considering the CSV approach but that adoption of the concept was limited with companies challenged by site specific factors including geographic, temporal, and stakeholder complexities (Economist Intelligence Unit, 2014). An additional issue associated with the idea of creating shared value is that it does not lend itself to a best practice model: since CSV is positioned as a business strategy, each company will develop its own proprietary approach that identifies unique points of intersection between company needs and the needs of its stakeholders. This makes it difficult to replicate success, even within the same company. Examples of mining companies that have used the CSV strategy are discussed in future chapters.

It should also be noted that not every review of CSV was positive. Authors Crane, Palazzo, Spence, and Matten (2014) label creating shared value a “seductive proposition”, which has strengths but which they believe is undermined by critical shortcomings. Crane et al. agree that “shared value” contributes to the continuing discourse on the role of business and society, yet argue CSV should not be considered a substitute for CSR, that it ignores the tension between economic and social goals and the complexities of the value chain, and – perhaps most damning – posit that “instead of promoting the common good, CSV might promote more sophisticated strategies of greenwashing” (Crane, Palazzo, Spence, & Matten, 2014, p. 137).

Porter and Kramer offer a very clear definition of CSV: “policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates.” (2011, p.66). However, in practice, the definition of CSV appears contested. In conversations with experienced social practitioners, I have been told that it is not possible to create shared value between companies and communities as the two entities do not share common “values”, and that a focus on a corporate economic imperative is not conducive to sustainable development. This misunderstanding of the intent of CSV, which is not about personal values or sharing value previously created by firms, is an impediment to acceptance of the concept. When Porter and Kramer first introduced CSV, they suggested that it provided strategic advantages that could not be achieved by CSR. More recently, they have modified their stance, continuing to advocate for CSV yet acknowledging that corporate philanthropy is needed, that CSR initiatives to reduce harm are valuable, and that CSR helps to build trust between companies and stakeholders (Porter, M. Lecture notes, 2016).

The debate between CSR and CSV is part of a more complicated discussion about the relevance of CSR. In recent years, some have declared CSR is dead. Peter Bakker, president of the World Business Council for Sustainable Development (WBCSD) voiced this opinion in January 2015 claiming that large companies were going beyond CSR to integrate sustainability into strategy rather than being satisfied with the illusion of responsibility that CSR offers (Townsend, 2015). John Browne (2016), former head of British Petroleum, endorses that view arguing that CSR has failed both companies and society, principally because initiatives are often detached from core business activities. This means company executives view CSR as a sunk cost, investments that offer little return, and NGOs criticize company programs as propaganda (Browne, Nuttall, & Stadlen, 2016, p. 13). Browne promotes “connected leadership”, described as “the integration of societal and environmental considerations into core business decision-making at every level of the company” (2016, p. 14) – a definition that aligns with that of CSV and strategic CSR – and that is focussed on long-term success for both business and society.

Others, including John Elkington, who in 2017, co-chairs the United Nations Global Compact Breakthrough Innovation Advisory Council, chairs the Global Reporting Initiative Technology Consortium, and is a member of the Advisory Board of the Global Commission on Business and Sustainable Development, feel it is too early to sound the death knell on CSR but question if it remains fit for purpose. In a debate, hosted by Barclays Bank in October 2015, Elkington noted that there has been a deep rooted and on-going discussion about the role of

business in society, which has taken place using many different names but with a common objective: helping companies to be not just “best in the world” but “best for the world”⁹.

2.8 Accountability

Publicly reporting CSR and environmental, social and governance (ESG) results is a way companies seek to prove social responsibility and demonstrate transparency. International Council of Mining and Metals (ICMM)¹⁰ members are obligated to publish annual reports in accordance with the Global Reporting Initiative (GRI), the world’s most widely used sustainability-reporting framework. The GRI targets investors and capital markets and focuses on identifying issues deemed material to both business and its stakeholders. Efforts to link traditional financial and operational performance with ESG initiatives are also under review by the International Integrated Reporting Council (IIRC). The objective is to increase concise reporting on strategy, governance, performance, and prospects, to account for the value of assets not generally captured in financial statements, and to have that information externally assured in the same manner as financial statements. Integrated reporting is an emerging concept regarded as best practice by some and the Johannesburg Stock Exchange requires its use by all member companies. While many endorse the integrated reporting concept, achieving the IIRC’s goal of creating global comparability, and encouraging the allocation of financial capital to reward and support long-term value creation, may be difficult to achieve. Accountability measures are valid but despite their increasing availability and use the initiatives

⁹ The debate can be viewed at <https://www.youtube.com/watch?v=Kdu01FhtngU> .

¹⁰ An international industry association dedicated to improving social and environmental performance in the mining sector.

reported upon do not appear to be meeting stakeholder expectations for CSR. Reporting and other CSR and transparency tools are examined in more detail in Chapter Three.

2.9 Mining-Community Conflict

In the mining sector, there appears to be increasing incidents of conflict between mining companies and the communities that host their operations. Zhang et al. (2015) note that “protests against mining operations and associated activities have constantly dominated headlines around the world, with the consequences ranging from interruptions to mining production through to the permanent closure of operations (2015, p. 1063).

Many of the mining company-community conflicts recorded in the past decade raise fundamental questions about social responsibility, local rights, governance, and the environment. Some have suggested that mining companies finding themselves at the centre of CSR and sustainability debates could play a leadership role in developing new and progressive ways of seeking solutions to common problems (Bebbington, 2014). Many of the common environmental and social problems Bebbington references are encapsulated in the United Nations (UN) 2030 Sustainable Development Goals (SDGs). It will be argued that the SDGs offer the mining industry an opportunity to change its stakeholder dynamics.

The 17 SDGs, illustrated in Figure 2.3, have been endorsed by 193-member states of the UN, as well as business, industry, development agencies, and civil society. Mining has contributed to many of the problems the SDGs are seeking to address. For example, water quality and quantity; environmental pollution and associated health risks; greenhouse gas emissions and climate change; social inequity, conflict, and corruption, to name a few. Yet the potential of industry to play a critical role in helping to achieve the SDGs in resource-rich

countries is well recognized (UN Development Program, Columbia Centre for Sustainable Investment, Sustainable Development Solutions Network, World Economic Forum, 2016). Success will require mining companies to make changes to treat sustainability and social responsibility as business strategy rather than discretionary spending (Stubbs & Cocklin, 2008), and Michael Porter has declared the SDGs as “fantastic framing for CSV” (Lecture notes, HBS Executive Education Program, December 6, 2016). Sustainability leader, Paul Polman, believes the SDGS “present a clear moral case for change, but companies must also recognize that they represent the business opportunity of a lifetime too and must adapt to take advantage of it (sic)” (Polman, 2017). To advance the SDGs, mining companies will need to engage more effectively to foster collaboration with stakeholders. This will be important because while mining has a critical role to play in addressing the SDGs, industry will not be successful on its own. The grand challenge and “The elegance of the SDGs is in the articulation that human progress stems from achieving these clear targets through collective, collaborative, and coordinated effort.” (George, Howard-Grenville, Joshi & Tihanyi, 2016, p.1881). SDGs 1, 6, 7, 8, 9, 13 and 16 have been flagged by the UN, the WEF, and others as those where mining has the most potential to leverage its expertise and make the greatest contribution. The Cerro Verde case study examined in Chapter Five is an investigation into how mining companies can make business decisions with sustainability and social responsibility at the core. Although initiated before the SDGs were launched, the case provides an example of what a mining company willing to tackle SDG #6 (clean water and sanitation) can achieve.



Figure 2.3 - The United Nations 2030 Sustainable Development Goals. Source: <http://www.un.org/sustainabledevelopment/news/communications-material/>. Accessed 9 February 2017

It is a premise of this research that mining-community conflict is best viewed as a “meta-risk” or enterprise risk – one that has the potential to affect all aspects of company operations – that creates reputational risk as well as legal, financial, and operational risk. Mining-community conflict travels the project life cycle from exploration, feasibility, construction, operations, and closure, with feasibility and construction as the stages most susceptible to incidents of company-community conflict (Davis & Franks, 2014). Conflict is taking place in countries considered to be high-risk jurisdictions due to long-standing civil wars, corruption, and/or weak governance. But mining-community conflict is also occurring in politically stable first-world countries, such as Canada and Australia, which agencies such as UK risk consultancy, Maplecroft, classify as high-risk jurisdictions due to stakeholder opposition to mining. As an increasing number of mining companies have learned, when the competing needs of stakeholders are not managed well, projects can be delayed, community opposition can grow, and reputational damage can be accrued. This issue of mining-community conflict –

referred to by some as social risk – is the subject of a quantitative analysis reported on in Chapter Three.

In common with other terms used in this research, the definition of social risk is contested. The view most frequently endorsed by industry is that of Kytle and Ruggie (2005) who write, “from a company’s perspective, social risk arises when an empowered stakeholder takes up a social issue area and applies pressure on the corporation (exploiting a vulnerability in the earnings drivers – e.g. reputation, corporate image), so that the company will change policies or approaches in the marketplace” (p.6). They suggest that CSR represents an excellent mechanism for addressing social risk challenges across the business enterprise, provided it is an extension of global operations policies, that CSR programs are not discretionary expenditures or the target of cost-cutting activities, and that CSR is linked strategically to core business functions (Kytle & Ruggie, 2005, p. 1). Those who endorse this definition advocate for using CSR and stakeholder engagement to collect intelligence then integrate the information to the organization’s strategic risk paradigm. In other words, aligning social risk with other forms of risk management such as technical, legal, operating, financial, and political risk.

$$\textit{Social risk} = [\textit{Threat (stakeholder + Issue)}] \times [\textit{Vulnerability}]$$

Equation proposed by Kytle and Ruggie 2005 to assess probability and consequences of social risk

The perspective on social risk as the risk to business from the interactions with, and actions of, host communities is echoed by Joyce and Thompson (2000). “The viability of projects becomes threatened because they are considered socially unacceptable, a phenomenon that we describe as social risk” (Joyce & Thompson, 2000). Yet others (for example, Lapalme 2003; Schafrik and Kazakidis, 2011) have suggested that this definition is not

appropriate, arguing that social risk is the risk that specific operations pose to local communities. University of Queensland scholars (Brereton & Parmenter, 2006; Graetz & Franks 2015; Kemp, Worden & Owen, 2016) have been at the forefront of efforts to differentiate business risk and social risk, encouraging industry to view social risk as the risk from mining operations to one or more social entities (indigenous populations, communities, adjacent land owners, local business, etc.). Graetz and Franks (2016) suggest that business risk and social risk are conflated and that confusion over the definitions of these terms has the potential to lead to greater conflict. They propose that social risk should be defined as “the perceived or expected potential future threats to, and unwanted impact on, individuals and groups of individuals arising from the processes of social change precipitated by development interventions and the decisions of external actors” (Graetz & Franks, 2016, p. 587). This approach posits that threats and unwanted impacts on a company’s operations, reputational capital arising from operational decisions and strategies, and the exogenous response of other actors to these decisions and strategies, should be labelled as business risk. Their University of Queensland colleagues concur arguing that industry’s failure to distinguish between social risk, which they define as risk to people, and business risk, “creates a barrier to accurately defining key concepts and understanding the process through which risks interact” (Kemp, Worden, & Owen, 2016, p. 24). Kemp et al. believe the mining industry is equating social risk with social acceptability risk, a term introduced by Miller and Lessard in 2001 that stresses the importance of effective stakeholder engagement to reduce community opposition to large engineering projects.

This research acknowledges the importance of definitional clarity and the rationale for defining social risk as a risk to society rather than as a risk to business from society. The idea of

social acceptability risk, proposed by Kemp, Worden and Owen, is an interesting one yet is susceptible to the same criticism that has been levied against the term “social license to operate”: it will be difficult to measure, easier to point to the absence of factors than to know relevant factors are in place, and is likely to be contested by competing stakeholder groups (Owen & Kemp, 2013). Mining companies are a principal target audience for the application of this research and, therefore, it is relevant to speak to the risk to business from the interactions with, and actions of, host communities. However, in recognition of the contested nature of the term, and to show appreciation for the ongoing academic discussion, the term most frequently employed in future chapters will be mining-community conflict. Chapter Six will revisit the terminology in widespread use suggesting that the root cause of much “social risk” is a lack of trust. Building upon practitioner experience, it will be suggested that “trust risk” may be a concept worthy of future research.

2.10 Social License to Operate (SLO)

The term “social license to operate” was introduced by then-Placer Dome executive, Jim Cooney, honoured in 2011 by the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) and, in 2017, by the Association for Mineral Exploration British Columbia (AME BC), for his role originating the concept. In his work at Placer Dome, Cooney had come to realize that even if companies were compliant with government regulations for operational performance, reducing risks to human health and safety, and to the environment, and secured the required permits for operations, social acceptability was not guaranteed. When he introduced the term SLO at a World Bank conference in 1997, he intended it to be an analogy that highlighted the equivalence of social risk management challenges at the community level with operational

permitting requirement at the governmental level (Cooney, 2017). Since its first use, the concept of SLO has morphed and “derives from the fact that every company needs tacit or explicit permission from governments, communities, and other stakeholders to do business” (Porter & Kramer, 2006). Social license is said to exist when a mining project is seen to have the broad, ongoing approval and acceptance of society. The concept has been viewed positively by some (see the work of Ian Thomson and Robert Boutilier, 2011) and the term is now widely used as an industry response to opposition and a mechanism to ensure the viability of the sector. SLO also has detractors who view it as a harmful impediment to effective decision-making about major industrial projects or who warn that philanthropy and traditional approaches to CSR do not equate to a SLO (Harvey, 2014). For those attempting to work with stakeholders to mitigate all forms of social risk, the concept of a social license raises thorny questions: who grants the social “license”, how do companies know when it has been earned, how is it measured, and what does it look like? In common with CSR, there is considerable diversity in the application of the term, SLO, and, both “. . . are casually used in board meetings without a great deal of deeper meaning. They have also become somewhat synonymous with simply throwing money at a problem” (Globescan, 2014).

The legitimacy of the SLO term is further complicated when SLO is conflated with Free Prior and Informed Consent (FPIC) or linked to IBAs. Thomson and Boutilier (2011) and Prno & Slocombe (2012) identify crucial differences between FPIC and SLO: FPIC, derived from UN Declaration on the Rights of Indigenous People (UNDRIP) and the International Labour Organization (ILO) convention 169, is a duty of the state versus SLO which companies can obtain without state involvement. The goal of FPIC is to ensure consent is received before the

project proceeds and as a condition of government approvals. This can be contrasted with SLO which considers the need to maintain good relationships once the project is operating. Another fundamental difference is that FPIC is specifically focussed on indigenous peoples while SLO encompasses indigenous peoples plus all stakeholder groups (Prno & Slocombe, 2012)

IBAs, also known as Participation Agreements (PAs), are increasingly common in Canada and represent legally binding agreements between a mining company and Aboriginal groups whose traditional lands are impacted by the proposed mining project. Typically negotiated between company and Aboriginal community, or First Nation, without state involvement, the agreements are a means to ensure that Aboriginal communities benefit from – or are compensated for – mining on their traditional lands. These agreements can include royalty sharing or other means of financial compensation, preferential contracts, opportunities for jobs, training, and economic development. Lapierre and Bradshaw (2008) seem to suggest IBAs are a means of securing SLO. Others describe IBAs as a means to compensate Aboriginal communities: to address the adverse effects of commercial mining activities on local communities and their environments, and ensure that First Nations receive benefits from the development of mineral resources (Sosa & Keenan, 2001, p. 2). In my personal experience¹¹, IBAs can include clauses prohibiting signatories from protesting against the mine specified in the agreement, however, I would argue that although IBAs may be a formal aspect of securing

¹¹ During my time at De Beers I worked closely with the team negotiating participation agreements with the Attawapiskat First Nation for the Victor Diamond Mine in Ontario and with the Lutsel'ke for the Snap Lake Diamond Mine in the Northwest Territories. I was also on the IBA team negotiating agreements with two First Nations impacted by the Mount Milligan Mine in British Columbia.

social permission, the intent is compensation and therefore IBAs should not be conflated with social license¹².

2.11 CSR Challenges

For decades, scholars have sought to determine if the financial benefits to business from its CSR activities can meet or exceed the costs of its contributions to social welfare. If so, CSR can be justified as a wise investment; if not, CSR can be condemned as an agency problem (Barnett, 2007). Friedman's classic argument says the costs of social welfare programs cannot be justified by business. The father of stakeholder engagement, R. Edward Freeman, takes the opposing view, arguing there is a business case for effective engagement and socially responsible behaviour (2010). Scholars including Charles Fombrun and Cees Van Riel, founders of American think tank, *The Reputation Institute*, have sought to demonstrate that companies with good reputations, which they believe are built upon a foundation of CSR, report significantly higher operating performance. Research conducted annually by the Reputation Institute suggests companies with a good reputation earn a 30 per cent higher valuation (profit to earnings ratio); earn a 15 per cent better valuation based on enterprise value/earnings before interest tax and amortization (EBITA); and, out-perform low reputation firms and the Standard & Poor 500 Index on the stock market (Reputation Institute, 2011).

There is other research indicating the financial value of a good reputation (Barnett, 2006, de la Fuente Sabate & Quevedo Puente 2003, Suh, 2007, Fombrun and Shanley, 1990),

¹² It is worth mentioning that Environmental Impact Assessments (EIAs) and Social Impact Assessment (SIA) are typically part of a regulatory review process. Both can create baselines to measure CSR performance and contribute to a requirement to implement practices to mitigate impacts but, as was noted by Cooney 20 years ago, the granting of approval for a EIA or SIA should not be confused with a SLO.

with a suggestion that 70-80 per cent of market value comes from hard-to-assess intangible assets, including brand equity, intellectual capacity, and goodwill (Eccles, Newquist, & Schatz, 2007). This figure aligns with the claim made by the World Resources Institute that approximately 75 per cent of the market capitalization of companies in the Dow Jones Industrial Average is derived from a company's brand and reputation (Herz, La Vina, & Sohn, 2007, p. v). The financial value of reputation is reinforced by Roberts & Dowling's (2002) empirical research demonstrating, "That a corporate reputation is an important strategic asset that contributes to firm-level persistent profitability" (p.1091). There is also empirical evidence that investors reward socially responsible companies (Sharfman & Fernando, 2008) and that the stock market responds negatively when a firm is removed from social responsibility stock market indices, which happens when a firm is believed to have engaged in irresponsible behaviour (Doh, Howton, Howton, & Siegel, 2010). A countermeasure to Doh et al. – or perhaps an exception to their findings – is offered by an example from the mining sector. In 2011, Canadian mining company, Goldcorp, was removed from the Dow Jones Sustainability Index (DJSI) following long-standing allegations of human rights and environmental abuses at its Latin American mines, particularly the Marlin Mine in Guatemala. The news was announced in September 2011. One month earlier, in August 2011, the company's stock was trading at \$45.64. In September, the stock price increased to \$48.64 and closed the month of October, several weeks after the DJSI announcement, at \$53.69, suggesting in that case the loss of certification had negligible impact on Goldcorp's investors. This one example does not detract from the relevance of the growing body of literature positing a business case for assessing project risk not only for financial, legal, and operating risk but also through the lens of

reputational risk, measuring and mitigating social risk can enhance the probability that a project can proceed and, ultimately, generate sustainable value (Henisz, Dorobantu, & Nartley, 2013).

Carroll and Shabana (2010) concur that strengthening legitimacy and reputation is one aspect of the business case for CSR, noting three other drivers: reducing cost and risk; building competitive advantage; and creating win-win synergistic value creation. Efforts to document a positive relationship between corporate social performance and financial performance have also attracted considerable scholarly research (for example, Margolis & Walsh, 2003; and Orlitzky et al, 2003).

In the mining sector, a solid business case for social and environmental performance supports company personnel wishing to integrate the social aspects of mining into business strategy. Some scholars suggest making the business case for CSR contingent, or firm specific, versus universal (Barnett, 2007). There is also a suggestion in the literature that the business case should address value protection and capture, as well as the potential for value creation (Parker, Van Alstine, Gitsham, & Dakin, 2008). Some scholars focus on establishing the ideal level of CSR spending, which McWilliams and Siegel (2011) classify as one that maximizes private return and is determined by cost benefit analysis (CBA). However, traditional evaluation techniques including CBA, as well as net present value (NPV), discounted cash flow, and internal rate of return (IRR), can be difficult to apply to CSR initiatives. In the mining sector, monetizing social risk, or the costs of conflict, is one variable in the equation illustrating the value proposition of strategic CSR.

2.12 Lack of Social Acceptance

Research by environmental consultancy, Environmental Resources Management (ERM), tracked mine development projects with a capital budget of more than \$500 million over a four-year period (2008 – 2012) to determine how many projects came into production on time and on budget. Less than a third were commissioned on schedule, 46 per cent were delayed, with non-technical risk factors, including lack of social acceptance, cited as the most common causes of impediment (Molyneaux, 2013). These findings are reinforced by Ernst & Young's research in 2014 examining projects costing +\$1 billion. Once again, 50 per cent of the projects reported schedule delays with stakeholder conflicts one of the root causes (EY Mining and Metals Centre, 2015, pp. 23-25). The ICMM attempted to quantify global incidents of mining community conflict, reporting an exponential increase in the decade from 2002, where fewer than 10 conflicts were recorded, to 87 in 32 countries in 2012 (Hodge, 2014). ICMM used publicly available data on incidents reported to civil society organizations. In its 2015 social and economic report, the ICMM notes that "these sources were not corroborated by the parties involved or third parties; which has a potentially limiting effect on the reliability of the sources used" (ICMM, 2015, p. 6). This acknowledgement prompted interest in examining a source not previously considered, yet deemed relevant for its purported objectivity: media coverage. The findings of that empirical analysis are reported in Chapter Three.

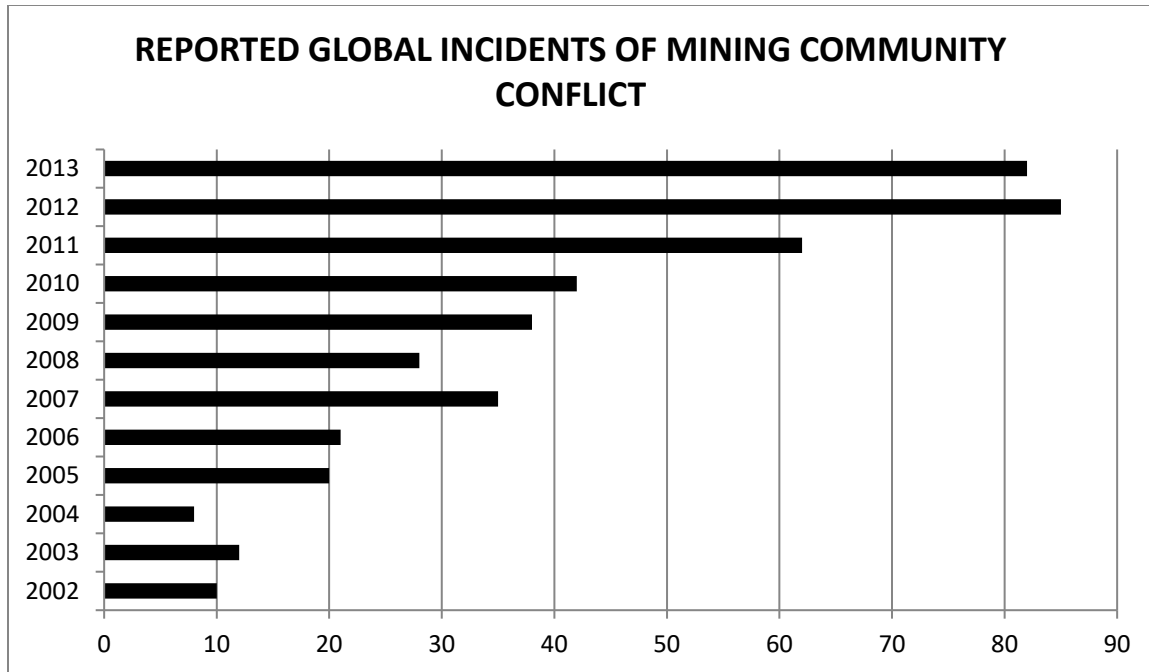


Figure 2.4– Data from ICMM. Sources: Business and Human Rights Resource Centre, ACCESS, Compliance Advisor Ombudsman for IFC and MIGA, Global Policy, Indigenous Peoples Issues and Resources, Mines and Communities, Mining Watch Canada, National Confederation of Peruvian Communities Affected by Mining(CONACAMI), OECD Watch, and Office of the Extractive Sector Councillor of Canada.

While the literature notes that causes of mining-community conflicts are often complex, the ICMM (2015), E&Y (2014), Davis et al. (2014), Dobbs et al. (2013), Franks et al. (2014), and Kemp et al. (2011), have found that many situations are driven by competing demands for land access, concerns about social and cultural change, issues related to resource governance or transparency, and inequitable distribution of benefits. Regardless of the cause of the dispute, there is agreement that mining community conflict is costly.

In 2014, researchers reported on the results of a series of qualitative interviews with mining company personnel (Davis & Franks, 2014). The research suggested two principal costs associated with mining community conflict: those related to preventing or addressing conflict; and, those associated with the outcomes of conflict including project modification, redress, and lost production. Multiple interviewees reported cases of mining projects with capital

expenditures of between US\$3-5 billion losing US\$20 million per week of delayed production in net present value terms arising from community conflict (Franks, et al., 2014). In addition to lost opportunity value, a further outcome of company-community conflict is reputational damage. Franks et al. (2014) acknowledge that capturing the full cost of reputational risk can be challenging but point to media analysis as one useful tool – an observation that lends credibility to the methods employed in Chapter Three.

Another interesting finding from the above research was that many companies do not aggregate the full cost of conflict. A common organizational approach for mining companies is to operate within silos (business units or functional areas such as operations, finance, legal, human resources, and social responsibility) and with a degree of autonomy between site and head office operations. This creates challenges for companies seeking to quantify the value of staff time diverted to manage conflict, which Franks et al. (2014) found was the most often overlooked cost of stakeholder-related risk. Complicating stakeholder engagement is the fact that stakeholders are typically the responsibility of different functional areas within the organization. But if actions across departments are not aligned, confusion can result with the perception of different – or contradictory – information creating reputational risk. Kemp and Owen (2013) argue that the extent to which mining companies integrate social practitioners (CSR and community relations personnel) to core business demonstrates the value the company assigns to social performance, and indicates the company's level of commitment to CSR. Another finding of their research is that when community knowledge is integrated to business decision-making it reduces risk to operations from community concerns (Kemp & Owen, 2013). The conclusion that an integrated team creates stronger internal alignment,

supports more effective risk management, and protects trust, is discussed further in Chapters Four, Five and Six.

2.13 Trust Deficit

Global public affairs agency, Edelman, has been tracking trust in business, industry, government, the media, and NGO groups for 17 years. The annual Edelman Trust Barometer is a survey of 33,000 people in 28 countries and the 2017 results indicate that “trust is in crisis around the world” (Edelman, 2017, p. 8). The 2017 survey shows that general trust in major institutions declined broadly. This is unwelcome news for mining, which ranks as one of the least trusted industry sectors. In 2014, research consultancy Globescan measured net trust in industry sectors in 24 countries. Mining scored -4, well below the most trusted sector, information technology, with +24 points (Globescan, 2014).

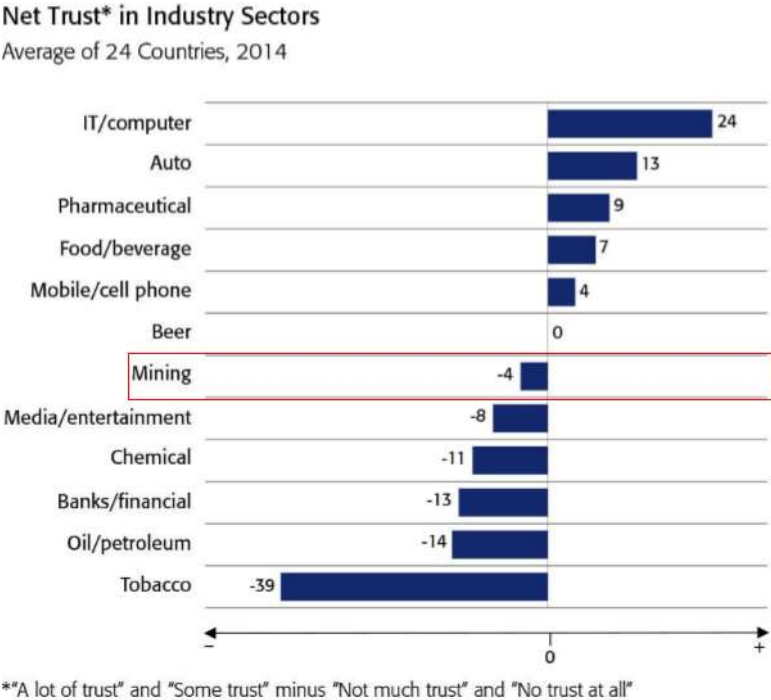


Figure 2.5 – Net trust in industry sectors. Source Globescan Radar 2014 Presentation (p.5). Polling results for question “please tell me how much you trust each of the following types of companies. Scale is from 1 (no trust at all) to 5 (a lot of trust).

Trust is a central element in local communities' acceptance of mining and is shaped by perceptions of distributional and procedural fairness, and confidence in governance (Zhang, et al., 2015). Findings of the Zhang et al. research (2015) suggest that in situations where community residents feel that mining companies have not treated them fairly, or where companies are believed to have failed to distribute benefits, mining-community conflict is a likely outcome. Much of the social responsibility and sustainability literature reviewed thus far endorses the notion that trust is a crucial factor in reputation (see Tuck 2012 for an assessment of reputation formation in the Australian mining industry), that mutual trust is the foundation for effective stakeholder relationships, and that lack of trust is a driver of mining-community conflict. This issue is explored further in Chapter Four where it is proposed that trust may merit its own category of risk.

2.14 Summary and Conclusions

Having reviewed the various definitions for CSR, and considered them in the context of the objectives of this research, the Kytte and Ruggie (2005) definition has been selected to frame this discussion. When applied to the mining sector, this definition suggests that CSR incorporates philanthropy and compliance to a business strategy to manage the triple bottom line (environment, economic and social), as well as relationships with stakeholders in the workplace, the marketplace, the supply chain, host communities, and with government. It will be argued that to reduce mining-community conflict, company success is contingent on a long-term vision for delivering business and social value that can be framed within strategic CSR.

While there is general agreement in the literature that CSR in the mining sector is required to earn social consent – sometimes referred to as a social license to operate – there is

little consensus on which CSR approach (transactional, transformative, or transactional) is best and very little empirical evidence of which approach should be utilized at the various stages of mining projects. A hypothesis considered in this research is that traditional corporate social responsibility programs, grounded in philanthropy and other forms of transactional stakeholder engagement, contribute to trust building but are not effective at reducing mining-community conflict. An objective of this research is to address this gap in current literature and offer a theory for grounding CSR approaches within the temporal boundaries set by the common stages of the mining life cycle: exploration, construction, operations, and closure. It will be argued that the long-term nature of mining, where life of mine can extend for several decades, makes the sector ideally suited to invest in strategies that deliver benefit to both business and society. The UN 2030 SDGs appear to offer the mining industry an opportunity to break the cycle of short-term thinking, currently dominating financial markets, and create measurable business value by addressing social problems that affect operations. This research proposes that using the creating shared value strategy to address social issues exemplified by the SDGs can be characterized as transformative.

As confirmed by the literature review, there is no shortage of tools to help companies communicate, or of strategies to support community engagement. However, incidents of mining-community conflict continue to increase despite initiatives by mining companies to earn social acceptance and report on CSR. I interpret these findings as an illustration of dissatisfaction with the current model of resource extraction – one that has failed to transform resource wealth into longer-term sustainability for the communities that host mining operations.

The root cause of much mining-community conflict appears to be driven by a lack of trust. Mining companies wishing to adopt a more strategic approach to CSR and sustainability may need to consider how to use transactional and transitional CSR to earn the trust necessary to advance to more transformative approaches where trust is a central tenet. This research will present a hypothesis that the CSR continuum can be temporally bound to the stages of mine development (exploration, construction, operations, closure) to support more sustainable outcomes aligned with the UN 2030 SDGs. Before exploring the opportunity for mining companies to reframe CSR as a strategic business imperative (that supports sustainable outcomes for extractive communities), it is necessary to examine mining-community conflict in more detail. Chapter Three reports upon a quantitative analysis of international media coverage from 2012 - 2015. The objective is to document the number of incidents, companies and countries affected; classify causes of conflict; and consider questions raised by the findings.

Chapter 3: A Media Analysis of Mining-Community Conflict and Investigation into the Value Proposition of Social Responsibility

3.1 Setting the Stage

From the high stakes odds of finding a mineable deposit to the challenges of building and operating projects in inhospitable regions, mining has always been a risky business. Over the years, mining companies have become adept at managing a triumvirate of traditional risk (legal, financial, and operating), building expertise to mitigate threats to project production schedules and budgets, and to position shareholders to profit from their investment. But the ability to manage social risk, interpreted in this chapter as the risk to operations from interaction with, and the actions of, communities that host mining (Bekefi, Jenkins, & Kytte, 2006), and which may be characterized as the moral evaluation of corporate behaviour (Yaziji, 2005), has proven to be more difficult.

Social risk raises the spectre of social responsibility and, until recently, the mining sector tended to embrace Nobel-prize winning economist Milton Friedman's belief that, "There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits" (Friedman, 1970). The sector's ability to focus on profits was enabled, in part, by the fact that for many years the public had little input to mine planning. While there may have been occasional cases of individuals criticizing unacceptable behaviour, it was not until the latter part of the 20th century that various stakeholder groups achieved success when pressuring government and industry to move towards transparency in operational decision-making and financial reporting (Paine, 2003). This may be why the global

mining industry only rallied around social responsibility in the mid-1990s, a time of rising NGOs' influence. Several highly-publicized mining incidents that adversely affected public opinion of the mining sector also occurred in the 1990s. Some of the issues Dashwood (2014) cites as attracting attention in those years included the forced closure of the Bougainville Mine in Papua New Guinea due to environmental and human rights concerns; the collapse of the tailing storage facility at the Marcopper Mine in the Philippines with the subsequent pollution of the region's drinking water; and land use conflict resulting in the failure to secure permits for the Windy Craggy copper project in the Canadian province of British Columbia. In addition, there was the Westray explosion that killed 26 underground coal miners in Nova Scotia and resulted in criminal charges against two mine managers for alleged mismanagement; and bitter strikes in the British coal mining sector. The 1990s were also a time when lending institutions, including the World Bank, began to attach environmental conditions to loans and when discussions began that led to the development of the International Finance Corporation's (IFC) first performance standards, introduced in 2006. In the face of growing social opposition, industry formalized its commitment to responsible mining with the formation of the Metals, Mining, and Sustainable Development (MMSD) initiative, which, in 2001, became the International Council for Metals and Mining (ICMM).

In the first part of the 21st century two fundamental changes occurred that adversely affected the success of mining projects and rattled the business-as-usual approach. The first was a change in the definition of business success. Milton Friedman's notion that the "business of business is business" has largely been replaced as companies endorse a new standard of corporate performance: one that places a growing emphasis on social imperatives as well as

financial performance, and where profits benefit stakeholders, not just shareholders. The second was increasing and costly incidents of mining-community conflict. From minor situations of company-community disagreement to sustained violent conflict, a failure to earn stakeholder approval has emerged as one of the leading causes of project delays and a key strategic risk. As noted in Chapter Two, Ernst and Young (EY) ranked civil opposition to mining projects as one of the top three risks to mining companies in 2014, and from 2008 – the peak of the super cycle – into 2016, earning a “social license to operate”¹³ ranked in the top 10 mining sector business risks identified by EY. In other words, for mining companies, whose projects can be built only where the deposit exists, and where the life of mine can extend several decades, generating value for both company and community is becoming a strategic imperative.

As a result, a growing number of mining companies endorse corporate social responsibility (CSR), hiring in-house experts and embracing global performance and reporting protocols such as the Global Reporting Initiative (GRI); Extractive Industries Transparency Initiative (EITI); IFC performance standards; the United Nations Global Compact; the Guiding Principles on Business and Human Rights; the United Nations Declaration on the Rights of Indigenous People (UNDRIP); and, the recently announced United Nations 2030 Sustainable Development Goals (SDGs). Evidence that miners are attempting to deliver CSR programs and report upon them in a more transparent way is provided by the growing number of companies

¹³ Defined here as the tacit and ongoing approval of local communities and other interested parties.

reporting to the GRI. In 2002, eight mining companies filed GRI reports. By 2012, the start of this study period, 193 mining companies filed GRI reports.

Companies adopting more socially responsible strategies may have different motives: some may be attempting to side-step regulation or avoid liability; some may be hoping to insure their reputation against the threat of online campaigns; others may genuinely want to change the nature of business to become more socially responsible. But whether the motivation is altruistic or enlightened self-interest, successful companies recognize the new premise: "Corporate social responsibility programs are a necessary element of risk management for global companies because they provide the framework and principles for stakeholder engagement, can supply a wealth of intelligence on emerging and current social issues/groups to support the corporate risk agenda, and ultimately serve as a countermeasure for social risk." (Kytte & Ruggie, 2005, pp. 1-2).

Year	Initiative
1989	International Labour Organization -Convention 169 on the Rights of Indigenous Peoples
1997	Global Reporting Initiative (GRI)
1999	Mining Minerals and Sustainable Development (MMSD) Dow Jones Sustainability Index (DJSI) UN Global Compact
2000	Voluntary Principles on Security and Human Rights (VPs) Calvert Social Index Carbon Disclosure Project (CDP) International Cyanide Management Code SustainAnalytics
2002	International Council for Mining and Metals (ICMM) Extractive Industries Transparency Initiative (EITI)
2003	Equator Principles Kimberley Process
2004	Towards Sustainable Mining (TSM)
2006	International Finance Corporation (IFC) performance standards
2007	KLD Global Sustainability Index United Nations Declaration on Rights of Indigenous Peoples (UNDRIP) Free Prior and Informed Consent (FPIC)
2010	International Standards Organization (ISO) 26000 International Integrated Reporting Council (IRCC) Dodd Frank – conflict minerals
2011	UN Guiding Principles for Business and Human Rights (Ruggie Principles -Protect, Respect & Remedy)
2015	Canadian Extractive Sector Transparency Measures Act (ESTMA) UN Sustainable Development Goals
2016	EU Conflict Minerals Regulation

Table 3.1 – Select CSR reporting and management initiatives by year established

Yet despite efforts to endorse policies and procedures to support socially responsible performance, the observation has been made that, “In recent years, mining company-community conflicts have received a great deal of attention by advocacy organizations and traditional and social media, creating the impression that these incidents are on the increase.” (International Council on Mining and Metals, 2015, p. 2). ICMM data, referenced in Chapter 2, was based on a review of the websites of advocacy groups including Business and Human Rights Resource Centre, ACCESS, Global Policy, and Mining Watch Canada, and monitoring groups such

as the Office of the Extractive Sector Counsellor of Canada.¹⁴ The findings suggest there were fewer than 10 mining-community conflicts in 2002 and more than 80 a decade later in 2012 (2015). This raises questions about how is conflict defined, if conflict levels have stayed the same but reporting has increased, whether all incidents of “conflict” reported by advocacy groups are also reported by the media, and if the escalation of conflict in recent years coincides with an increase in mining exploration, development, and operations. Other potential causes of increasing conflict may be development in areas where mining has not previously occurred (Brereton, 2014). The questions give rise to three hypotheses to be tested in the media research:

1. Increasing incidents of mining-community conflict are resulting from a failure on the part of mining companies to meet community expectations for sustainable outcomes.
2. Traditional corporate social responsibility programs, grounded in philanthropy and other forms of transactional stakeholder engagement, contribute to trust building but are not effective at reducing mining-community conflict.
3. It is possible to find “win win” solutions by augmenting standard philanthropic and performance optimization measures with CSR policies and practices that resolve problems shared by both company and community.

3.2 Methodology

This research is situated within corporate social responsibility and stakeholder engagement theory. Risk reduction is recognized as an important aspect of the business case for CSR (for

¹⁴ The full list of sources used can be found on p. 7 of the ICMM report

example, Bekefi, Jenkins & Kytle, 2006; Kytle & Ruggie, 2005; Paine, 2003; Parker et al, 2008, Zandvliet, 2004) and stakeholder engagement is a fundamental component of securing social permission to operate, and of effective community relations in the mining sector (Prno & Slocombe, 2012).

To extend past research, and investigate a source noted as important yet not previously explored, this chapter reports on a media analysis of mining-community conflict reported in the years 2012, 2013, 2014, and 2015. This time frame provides two years of data (2012 and 2013) to compare with the ICMM findings, coincides with the development of the UN 2030 Sustainable Development Goals at the Rio +20 Conference in 2012, and extends the research database with two additional years of study, ending the year the UN SDGs were announced. The media analysis quantifies incidents of mining-community conflict to investigate four questions:

1. Are incidents of mining-community conflict increasing?
2. In which countries are mining-community conflicts occurring?
3. Which companies and commodities are involved?
4. What are the main drivers of company-community conflict?

The dependent variable is incidents of company-community conflict in the mining sector. The independent variables include the country of conflict, the company and/or project involved, whether the project is a greenfield operation, expansion project, or existing operation; the commodity being mined; and the drivers of conflict. The research represents a systematic effort to quantify serious conflict situations, and examine the premise that conflict is

due, in part, to the failure of popular approaches to CSR that are not effective at meeting community expectations for sustainable outcomes.

While acknowledging that media reports are likely to highlight dramatic issues and cases, it is noted that this real-time, events-based approach has been used by other scholars (including Henisz, Dorobantu & Nartley 2013 and Davis & Franks 2014). In addition, “International events data, day-by-day coded accounts of who did what to whom as reported in the open press,” (Goldstein, 1992, p. 369) are a valuable source of quantifiable information. While news stories can be perceived as sensational, journalists working for international agencies commit to reporting news without distortion or misrepresentation and must be “independent, free from bias and executed with the utmost integrity” (Reuters, 2014). Media coverage also provides valuable insight to a company’s reputation, which is shaped by the information stakeholders receive about the organization (Fombrun & van Riel, 2004). As other scholars have noted, the media acts as a watchdog on corporate behaviour, which plays a role in prompting corporate governance by exposing inappropriate behaviour (Campbell J. , 2007). For these reasons, the media offers a relevant source of information on how mining companies or their projects are viewed.

The principal tool for the media analysis was FACTIVA, the news database owned by Dow Jones, which aggregates content from more than 30,000 publications and newswires, including primary source agencies (i.e. those that break news versus simply reprinting the reports of news-breaking agencies). To complement this database, the website of www.mining.com, a leading industry news agency not included in FACTIVA, was also searched.

Findings from the media analysis are examined to test the hypothesis that current approaches to CSR, grounded in philanthropy and other forms of transactional stakeholder engagement, are failing to deliver long-term benefits to communities that host mining operations. To test this hypothesis, CSR performance indices are reviewed to determine if those companies involved in multiple incidents of serious conflict meet the criteria for socially responsible companies, that is:

1. Have companies experiencing more than one incident of community conflict earned a place on sustainability or CSR performance indices?
2. Do these companies report on CSR using widely internationally recognized methodology?
3. Do the companies examined have Board of Director committees providing guidance on CSR and sustainability?

If most companies investigated meet criteria for social responsibility, the hypothesis that current approaches to CSR are not effective social risk mitigation measures will be investigated further.

3.3 Media Analysis

The first step in the media analysis was a search of the FACTIVA and mining.com databases for news stories containing key words from three verb categories to identify conflict situations: defensive (reject, protest, deny); offensive (accuse, demand, warn, threaten) and conflict action (demonstrate, reduce relationships, expel, seize, force). The verb categories were adapted from a scale developed for the purposes of analyzing World Events Interaction Survey (WEIS) data.

In total, more than 30,000 articles were captured using search terms “mining+ protest”, “mining+threaten” and “mining +conflict”. Articles were screened to remove duplicates (articles reproduced in multiple media outlets), as well as articles where key words were used in a different context. For example, “conflict” minerals, where much of the news coverage during the search period reported on efforts to introduce legislation designed to reduce trade in materials mined in conditions of armed conflict or human rights abuses.

The remaining articles were subjected to a second screen to capture only those reflecting serious conflict situations rather than all instances of company-community disagreement. The screening protocol took guidance from a scale in conflict literature. Joshua Goldstein’s interest in aggregating events by a means other than verb categories to count the number of conflicts, led him to design a set of weights for use in events data research. While Goldstein’s scale of plus 10 (high co-operation) to negative 10 (major conflict) was developed to assess the degree of conflict and cooperation between social and political actors, it is used here to distinguish incidents of serious conflict as opposed to all incidents of company-community disagreement.

For this research, only those situations that Goldstein’s method would place in the conflict quartile (scoring -5 to -10) are considered. For example, articles on reports of complaints or grievances, cancelled events, or a halt to negotiations were removed, as were “peaceful” protests. While these events document disagreements, stakeholder engagement theory suggests that if managed properly this tension can be productive and need not escalate to the types of conflict that inflict physical, emotional, financial, or reputational damage. As Bond (2014) notes, some degree of conflict is inherent in enduring relationships and, if

managed properly, can support positive outcomes. These outcomes may include changes to design to minimize impacts, or as Bebbington (2014) suggests, conflict can drive improved performance and in so doing reduce future conflict (see also Bebbington & Bury, 2009). For this reason, only articles containing descriptions of sustained or multiple protests, expelling groups or personnel, destruction of property or equipment, threats with force, attacks or violent assaults are included in this research.

	Articles coded as cooperation (+10 – 0)¹⁵ and minor conflict -1 to -4 were removed	Articles coded to categories -5 to -10 were included in the research
Goldstein weight	-1 to -4 Mild/moderate conflict: not included	-5 to-10 High conflict: included
Examples of event type	Deny accusation, give warning, submit, reject, peaceful protest	Sustained or multiple protests/protest with fatalities, detain personnel, damage equipment/property, expel group, threat with force, oppose, attack, assault, or violence
Search	Mining + protest	Mining + protest
Example of news report	Protests hit second largest uranium mine in Namibia By Vladimir Basov www.mining.com 2 July 2013 “. . .protesters had organized the peaceful demonstration”	Guatemala sends police, army to crack down on anti-mine protests, issues emergency decree By Sonia Perez Diaz and Luis Soto Associated Press 2 May 2013 “. . .several days of violent clashes between police and anti-mining protesters.”

Table 3.2- – Adapted from Goldstein’s conflict co-operation categorization to illustrate the screening protocol.

Since the objective of the research is to investigate incidents of mining-community conflict, media articles reporting on military conflict and/or terrorism were not included.

¹⁵ +10+6: Extend assistance, make agreement, give verbal support, receive/host visit
+5-0: Ask for information, appeal, express regret, return property, apologize

Divestment campaigns (efforts on the part of advocacy groups to brand a company's stock as unethical, or a "sin stock", and encourage investors to sell – or divest –the asset in question) were also excluded from the results. Although divestment campaigns are a form of protest and can be said to represent conflict, these events generally target the industry versus an individual company – for example, the coal industry or fossil fuel producers. Labour strikes were only included if industrial action escalated into wider community conflict such as an associated community protest and/or blockade. For this reason, platinum strikes in South Africa – a major source of conflict in 2012 – are included when the company in question also experienced community protests in support of workers. Incidents of resource nationalism have not been included unless there was a corresponding community protest or if community conflict served as a trigger to demand resource nationalism – for example, conflict in Kyrgyzstan over Centerra Gold's Kumtor gold mine¹⁶. Also not included, are legal cases before the courts during 2012-2015 addressing pre-2012 issues, or protests at the annual general meetings (AGM) of publicly traded companies. AGM protests may be triggered by company-community conflict but frequently involve non-community based actors and issues.

Once the screening process was complete, situations of mining-community conflict were coded by year, the country in which the conflict occurred, the company, and project and/or property, and commodity involved. Figure 3.1 illustrates the findings from three of the four research questions: are incidents of mining-community conflict increasing; how many countries are experiencing mining-community conflict, and how many companies are involved?

¹⁶ For a summary of the Kumtor issue please see <http://www.mining.com/criminal-probe-opened-against-centerras-kumtor-managers/>

Additional details on which countries are experiencing situations of mining community conflict are illustrated in Figure 3.3 and the causes of conflict are analyzed in Figure 3.4.

3.4 Findings

3.4.1 Incidents of mining-community conflict increased during the study period: from 33 in 2012 to 55 in 2015

Compared to the data collected from advocacy group websites, incidents classified as serious mining community conflict as reported in the media in 2012 (33) and 2013 (40) were not as numerous as incidents recorded by advocacy groups in the ICMM research (+80 each year).

There are three potential explanations.

1. The imposition of a weight for conflict means not all situations of company-community disagreement are recorded and therefore a lower number of conflict situations is to be expected.
2. The use of media analysis, which imposes the need for a degree of validation to the allegations of disagreement raised by third parties may mean that not all incidents reported in the ICMM data were viewed by journalists working in the international business media as conflict worthy of coverage. Media coverage can therefore be said to offer some balance and verify the content on advocacy websites, which are at liberty to report allegations of their members without a requirement for third-party verification.
3. Using the FACTIVA database may mean that certain regions are underrepresented. For example, while there was coverage of labour disputes, worker safety, and strikes in China and Russia there was very little coverage of mining company-community

interaction. This may be attributed to restrictions placed upon the media in those countries and the subsequent lack of press freedom. Both countries fall into the bottom quartile (least free) of 180 countries surveyed by Reporters without Borders in the 2016 World Press Freedom Index: Russia is ranked #152 with China at #176.¹⁷ (Reporters without Borders, 2016)

For these reasons, the results of the media analysis should be viewed as an empirical baseline meeting the following criteria: the conflict generated the attention of the international media, and, using the Goldstein conflict-cooperation scale, the incident is classified as a serious conflict.

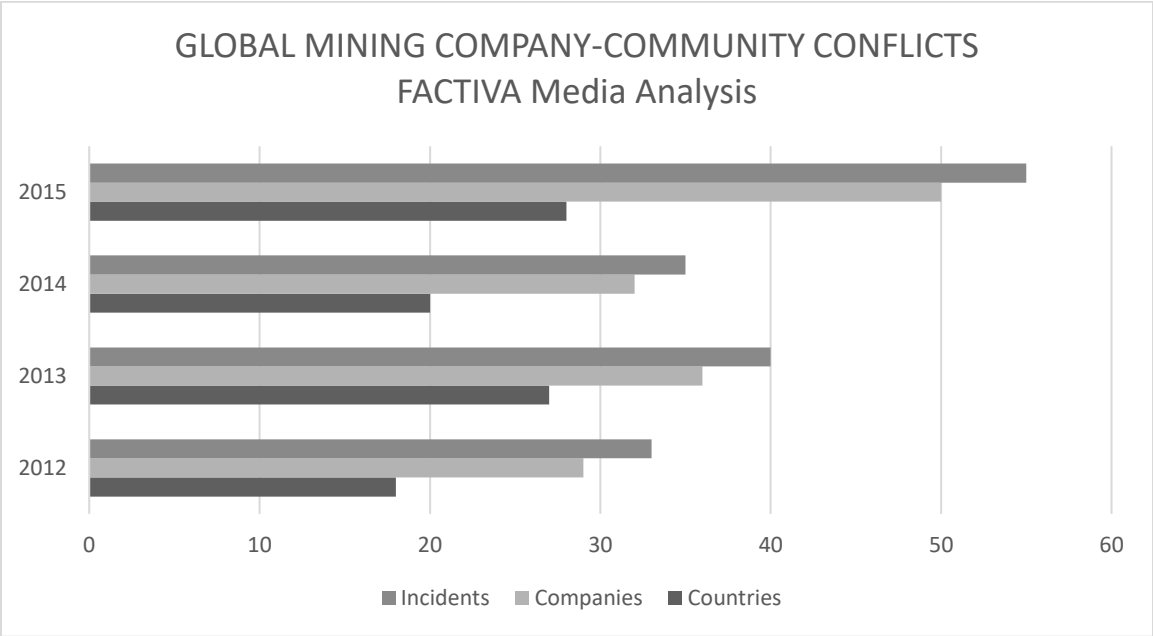


Figure 3.1- – Incidents of mining company-community conflict, countries and companies affected 2012, 2013, 2014, 2015

¹⁷ The World Press Freedom Index has been compiled annually since 2002 by Reporters Without Borders to survey the level of media freedom and independence in 180 countries.

The media analysis (Figure 3.1) records 33 conflict incidents in 2012, 40 in 2013, and 35 in 2014, however, there is then a significant increase noted in 2015 with 55 reported incidents of serious mining company-community conflict. These findings prompt a question about the level of activity in the global mining sector: perhaps the increase in incidents corresponds to an increase in the number of mining discoveries and operations. If mining was increasing, we could expect to see sector revenue numbers increasing. However, as Table 3.2 shows, this is not the case. The increase in mining-community conflict coincides with a period of financial constraint in the global mining sector, when revenue was down, exploration investment was reduced, new discoveries sharply declined (Figure 3.2), and when marginal operations were placed on care and maintenance or closed. In addition, the SNL Metals & Mining Pipeline Activity Index, a measure of global exploration and mine development activity, slumped in 2012 – the start of the research period – fell further in the first half of 2013, and remained depressed until the end 2016 (S&P Global Market Intelligence, 2016). This indicates that increased incidents of mining-community conflict cannot be attributed to a corresponding increase in mining activity. Increased conflict is explored further in the discussion of causes.

	2012	2013	2104	2015
Revenue of the global mining industry as represented by the top 40 mining companies	US\$525B	US\$512B	US\$500B	US\$402B

Table 3.3- Data from <http://www.statista.com/statistics/208715/total-revenue-of-the-top-mining-companies/>

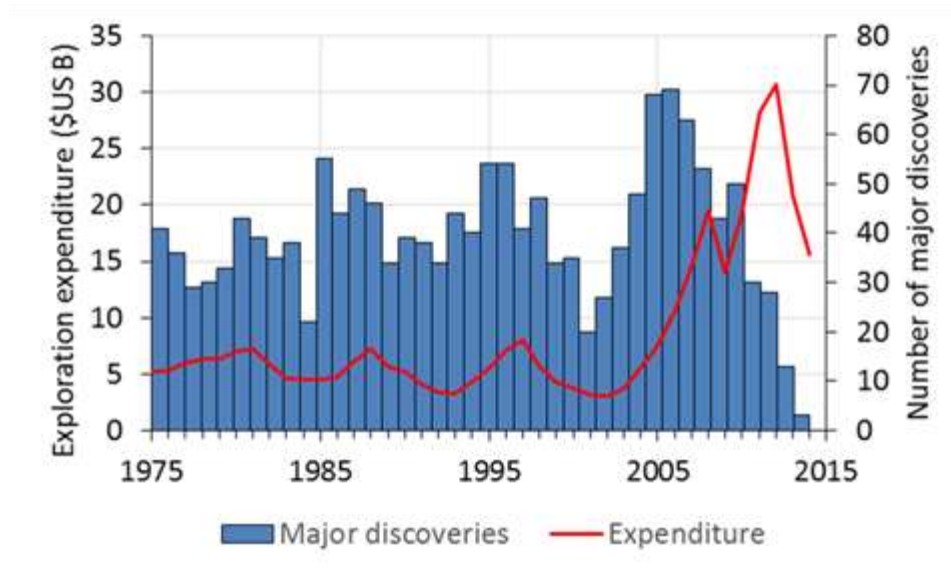


Figure 3.2– Global exploration spending and discoveries. Graph courtesy of Dr. Scott Dunbar, NBK Institute of Mining Engineering, University of British Columbia. Data provided by Richard Schodde, Minex Consulting, Australia.

3.4.2 The number of countries experiencing mining-community conflict increased from 18 in 2012 to 30 in 2015

During the study period, the number of countries experiencing mining-community conflict nearly doubled: from 18 in 2012, to 27 the following year, declining in 2014 with 20 countries impacted, only to see the number increase to 30 effected countries in 2015. Over the course of the study period, 49 countries experienced serious incidents of mining-community conflict (Figure 3.3)

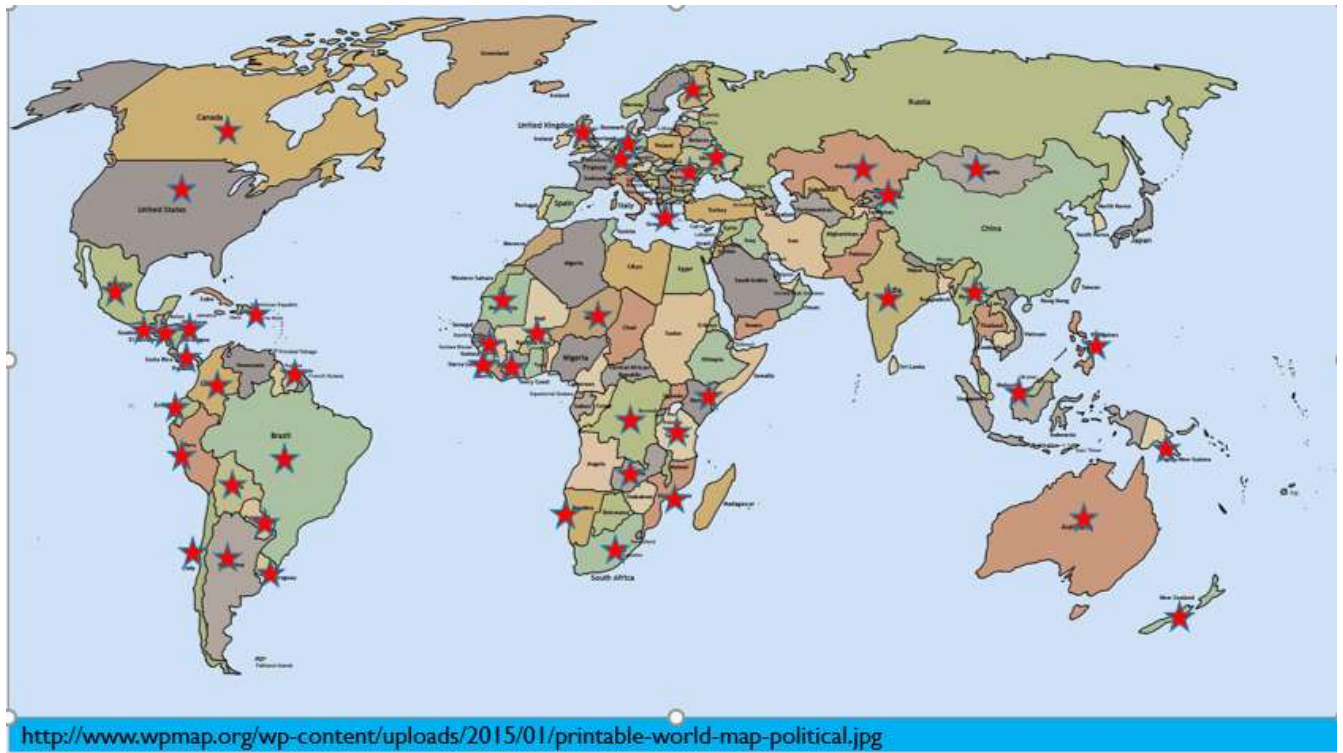


Figure 3.3- Countries (49) with media coverage of mining-community conflict in 2012, 2013, 2014, 2015: Argentina, Australia, Bolivia, Brazil, Burkina Faso, Canada, Chile, Colombia, Czech Republic, Dominican Republic, Democratic Republic Congo, Ecuador, El Salvador, Finland, Germany, Ghana, Greece, Guatemala, Guinea, India, Kenya, Kazakhstan, Kyrgyzstan, Malaysia, Mauritania, Mexico, Mongolia, Mozambique, Myanmar, Namibia, New Zealand, Nicaragua, Niger, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Sierra Leone, South Africa, Suriname, Tanzania, Tibet, Ukraine, Uruguay, United Kingdom, United States, Zambia.

It is important to note that conflict situations were not restricted to countries considered as high-risk jurisdictions by financial institutions and ratings agencies: company-community conflict is also occurring in countries with stable political environments, good governance, and a long history of mining, such as Canada, Australia, and the United States.

Country	2012	2013	2014	2015	TOTAL
Peru	7	6	7	5	25
South Africa	9	1	2	7	19
Canada	1	4	5	1	11
India	2	2	3	2	9
Chile	1	2	1	3	7
Mexico	2	2	2	1	7

Table 3.4– Countries experiencing mining community conflict in every year surveyed. Another 37 countries experienced incidents of serious mining-community conflict in one, two or three years of the study period. Of note: Canadian numbers reflect incidents linked to a national protest movement – Idle no More – active in 2013, and to protests linked to the 2014 collapse of the Mount Polley tailings storage facility, an event labelled by the media as an environmental disaster.

3.4.3 Mining-community conflict does not appear to be commodity specific

A variety of commodities were mined at the projects where conflict occurred, and while gold and copper were the most frequent, the media coverage does not suggest that the commodity was the driver of conflict.

Commodity	2012	2013	2014	2015
Gold (Au)	15	16	10	10
Copper (Cu)	8	8	13	13
Coal	4	6	4	13
Platinum	2	0	1	5
Silver	3	2	1	0
Iron ore	1	2	2	2
Uranium	1	2	0	2
Nickel (Ni)	1	1	1	1
Other: rare earth, chrome, lignite, fluorspar	0	2	2	2
Bauxite	1	1	0	0
Diamonds	0	0	1	1

Table 3.5 - Minerals found at mining or exploration projects attracting mining-community conflict in the study years. Numbers do not add up to annual conflict numbers as many projects mine more than one commodity at the same location.

3.4.4 The number of companies experiencing mining-community conflict increased from 29 in 2012 to 50 in 2015

The research indicates that the number of companies involved in situations of conflict is also increasing. There were 29 companies affected in 2012, increasing to 36 in 2013, declining to 33 in 2014 and spiking to 50 in 2015. There is no clear pattern to the types of companies involved in the documented conflict cases: some are multi-national companies, some are mid-tier or junior companies, some are state-owned, some are private companies traded on stock exchanges around the world. Both existing operations and new projects are prompting community conflict: for example, of the 55 situations recorded in 2015, 29 were at existing, or

“brownfield”, operations and 26 were at new, or “greenfield” projects. (See Appendix A for complete media analysis results).

Of the 105 companies affected by community conflict during the study period, 13 were involved in conflicts in three or four years of the study period. Table 3.5 summarizes the companies involved in conflict in three or four years of the study with projects targeted identified, as well as noting the country in which conflict occurred and the commodity being mined. Highlighted rows flag the four companies identified in the media analysis as experiencing conflict in each year of the study period.

Company	2012	2013	2014	2015
Adani Group • Project • Commodity • Country		Mahaguj Coal India	Carmichael Coal Australia	Carmichael Coal Australia
Anglo American • Project • Commodity • Country	Quellaveco Copper Peru	Pebble Copper USA	Michiquillay Copper Peru	Bokoni & Mogalak Platinum South Africa
Barrick • Project • Commodity • Country • Project • Commodity • Country	Pierina Gold Peru	Pascua Lama Gold Chile/Argentina Lagunas Norte Gold Peru	North Mara Gold Tanzania	Veladero Gold Argentina
Centerra • Project • Commodity • Country		Kumtor Gold Kyrgyzstan	Kumtor Gold Kyrgyzstan	Kumtor Gold Kyrgyzstan

Company	2012	2013	2014	2015
Glencore Xstrata <ul style="list-style-type: none"> • Project • Commodity • Country • Project • Commodity • Country • Project • Commodity • Country 	Alumbera & Agua Rica Gold, silver, Cu Argentina Loma Miranda Nickel DR Tintaya Copper Peru	Collinsville Coal USA Tintaya Copper Peru	Loma Miranda Nickel DR	
HudBay <ul style="list-style-type: none"> • Project • Commodity • Country 	Constancia Copper Peru	Lalor Lake Gold & copper Canada	Constancia Copper Peru	
Newmont <ul style="list-style-type: none"> • Project • Commodity • Country 	Conga & Yanacocha Copper Peru	Conga Copper Peru	Conga Copper Peru	Yanacocha Copper Peru
Southern Copper <ul style="list-style-type: none"> • Project • Commodity • Country 	Tía María Copper Peru		Tía María Copper Peru	Tía María Copper Peru
Vale <ul style="list-style-type: none"> • Project • Commodity • Country • Project • Commodity • Country 	Zogota Iron ore Guinea	Moatize Coal Mozambique Carajas Iron ore Brazil		Samarco Iron ore Brazil
Vedanta <ul style="list-style-type: none"> • Project • Commodity • Country 	Odisha Bauxite India	Odisha Bauxite India		Konkola/Nchanga Copper Zambia
Wanbao Mining <ul style="list-style-type: none"> • Project • Commodity • Country 		Letpadung Copper Myanmar	Letpadung Copper Myanmar	Letpadung Copper Myanmar
Whitehaven Coal <ul style="list-style-type: none"> • Project • Commodity • Country 		Maules Creek Coal Australia	Maules Creek Coal Australia	Maules Creek & Vickery Coal Australia

Table 3.6 – Companies with incidents of mining-community conflict in three or four years of the study period or sustained conflict at one project site extending over three of four years of the study period. Highlighted rows indicate companies experiencing mining-community conflict in each of the four years of the study period.

3.4.5 Causes of mining-community conflict

Although allegations of permit exceedances or regulatory non-compliance are noted, the analysis of the causes of mining-community conflict does not suggest that illegal behaviour is a principal driver of conflict. In addition, as noted above, mining-community conflict does not appear to be driven by the commodity being extracted, the company involved, or the country in which mining is occurring.

To analyse causes of conflict, media coverage was hand-coded and categorized. Several conflicts reported in the media appear to have overlapping causes or no clear cause. For coding purposes, those with no evident trigger for the conflict are noted as “unspecified” in Figure 3.4, while those with multiple causes were coded to the cluster variable that was most dominant in the news story being reviewed. Four cluster groups were identified.

1. Failure to deliver benefits to local communities. This includes dissatisfaction with the number of local jobs created, lack of local procurement, and unsatisfactory community development and/or community investment.
2. Land use. Conflict in this area is driven principally by competition for resources, infringement on areas of spiritual significance, issues associated with resettlement, and failure to consult regarding land use – one aspect of Free Prior and Informed Consent (FPIC).
3. Environment. Drivers of conflict include concerns about pollution, contamination, and degradation of the natural environment.
 - a. Water conflict is the principal issue in this category and is therefore recorded as a separate category in Figure 3.4. As a further rationale for considering water as a

separate category, Bebbington (2008) records that since 2005 the perceived adverse impact of mining on water quality and quantity represents the most contentious issue for the sector. This is consistent with IFC (2017) findings.

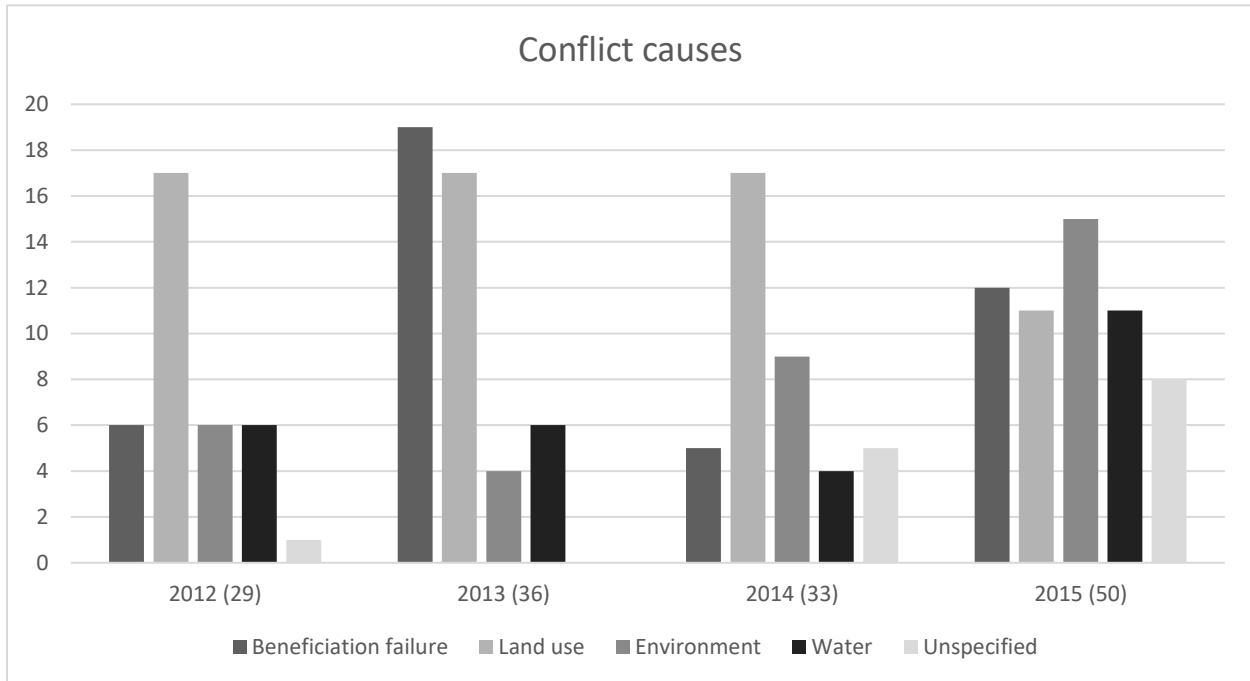


Figure 3.4 - Principal causes of conflict. Numbers do not add up to annual total (included in bracket behind year) due to situations with overlapping causes of conflict for example environment, which can incorporate water and land use concerns, as well as issues related to beneficiation.

Media coverage of three randomly selected mining-community conflicts and one purposefully selected conflict is examined in more detail below. The Barrick Gold, Eldorado Gold, and Taseko project conflicts were selected randomly as examples to illustrate the complexity of conflict and to explore cases representative of the principal causes of conflict. Southern Copper's Tía María project was purposefully selected for two reasons. First, as Peru has the highest number of mining community conflicts in two years of the media analysis, and has the highest total conflicts in the study period, it was deemed appropriate to select a case from Peru to examine. Tía María was branded by the UK newspaper, the Guardian, as Peru's

most significant environmental issue (Hill, 2015). In addition, the Tía María project is in the Arequipa region of Peru, is a large-scale copper mine, and water is a principal issue of concern: Tía María therefore shares a common geographic location, commodity, and issue of concern with the Cerro Verde project (examined in detail in Chapter Five). The comparative analysis of Tía María and Cerro Verde offers interesting findings to support the research hypotheses.

3.4.6 Barrick Gold and Pascua Lama: Multiple Drivers of Community Concern

One company captured in the media analysis for its first-hand experience of community conflict is Canadian miner, Barrick Gold Corporation. Barrick experienced mining-community conflict each year of the study period at properties in Peru (Pierina), Tanzania (North Mara), and Argentina (Veladero). But it was the Pascua Lama project that drew the most criticism internationally. Speaking at the company's 2013 AGM, company founder, Peter Munk, described the collision of environmental, community, and shareholder pressure on Barrick's Pascua Lama project as the "perfect storm" (Munk, 2013).

Pascua Lama is one of the world's largest potential gold and silver resources with more than 15.4 million ounces of proven and probable gold reserves, and 674 million ounces of silver contained within the gold reserves (Barrick, 2014). The project straddles the Chile-Argentina border, 1150 – 1600 metres above sea level in the Andes Mountains, 150 km southeast of Vallenar in the province of Huasco, Chile. Branded by the media as one of the most unpopular mining endeavours in Chile, a country once considered the most mining friendly jurisdiction in the world, Pascua Lama was suspended indefinitely following Barrick's \$10.4 billion loss in 2013. Capital costs on the project had risen from \$3 billion in 2009, when the project was

approved, to \$8.5 billion in October 2013, driven in part by falling commodity prices but also by public opposition.

The proposed mine is upstream of the Huasco Valley, an agricultural area, home to approximately 70,000 people. Local indigenous communities worked with international NGOs, including high-profile groups Greenpeace and Friends of the Earth, to raise awareness of Pascua Lama's perceived impacts. Some of the concerns included the potential for acid rock drainage from waste rock to pollute the Estrecho River, and for the mine's use of water to cause irreversible damage to the pristine mountain glaciers and deplete local water sources. (Glacial run off and snow melt are important water sources for the Huasco Valley). Residents, worried about the ability of mining infrastructure to withstand earthquakes, questioned the use of cyanide in gold processing, and alleged the company had failed to respect indigenous, human, and community rights. Regulators shared some of the concerns levying a \$16 million fine on Barrick – at the time the highest fine ever in Chile for environmental harm – citing serious environmental violations. In 2013, the project became the focus of a U.S. class action lawsuit and of labour unrest. In May, the New Zealand Superannuation Fund excluded the global mining company from its \$22 billion investment portfolio on responsible investment grounds. By July 2013, Barrick's stock price had fallen to \$15, down from \$50 in late 2011 and its lowest level in 21 years (Frik, 2013). During the fourth quarter of 2013, Barrick suspended

construction at Pascua-Lama, except for those activities required for environmental and regulatory compliance¹⁸.

The project illustrates the challenge of persuading local communities to accept mining projects even when companies such as Barrick, which has earned a spot on the Dow Jones Sustainability World Index for six consecutive years, and which has built its brand on “responsible mining” (www.barrick.com/responsibility) propose them.

3.4.7 Eldorado Gold: Benefits and Impacts

About the same time as Peter Munk was trying to manage fall out over Pascua Lama, thousands were marching in Greece to protest gold mining projects owned by Eldorado Gold. At the centre of the Greek controversy is a proposed gold mine, Skouries, which Eldorado Gold acquired as part of a 2012 friendly take-over of European Goldfields. The Skouries project has an approved environmental assessment, construction began in 2013, and the project was to come into production in 2016. At first, protests were localized and low-key but in October 2012, about 2,500 protesters clashed violently with police along the forest road leading to the Skouries site. The crowd was brought to order by authorities but in February 2013, protestors retaliated by firebombing a Skouries work site. Equipment and property were destroyed and masked men doused three security guards with fuel, threatening to burn them alive.

Eldorado Gold devotes a major section of its company website to “Responsibility,” including the statement that “As corporate citizens, we contribute to the economic prosperity

¹⁸ In March 2015, Chile’s environmental court ruled in favour of Barrick, rejecting claims that the project would damage nearby glaciers. One year later, in March 2016, the company indicated it was re-evaluating options to bring the project into production.

of host nations. Our projects are sources of foreign direct investment and generate direct taxes and royalties for government” (Eldorado Gold, 2015). According to the company’s general manager for Greece, when the mineral assets in Halkidiki and Thrace reach full production, an estimated 5,000 direct and indirect jobs will be created because of the investment (Apotolou, 2014). The appeal of jobs and opportunities is a common way to engage stakeholders on extractive sector projects and to demonstrate the benefits a mining project will deliver to the local community and its economy. Jobs, and the potential for supplier contracts, are often viewed by mining companies to be a relevant means to break the cycle of poverty. In a country such as Greece, trapped in a debt crisis and with an unemployment rate in 2014/2015 of 25 per cent, the company rationale for promoting the benefits of the project by way of employment is understandable. Yet critics of Eldorado Gold questioned the value of the economic benefits. The company will pay no royalties from Skouries to the Greek government (Eldorado Gold, 2011, p. 11). In addition, in April 2014, the Centre for Research on Multinational Corporations released a report revealing that Eldorado Gold was using the Netherlands as a conduit to shift its interest income to Barbados thereby avoiding paying taxes in Greece. The authors of *Fool’s Gold* estimate that the Greek government lost \$2.3 million in tax payments from Eldorado Gold in 2012-2013 (SOMO, 2015).

If the allegations about tax avoidance are true, there is some degree of probability that Eldorado Gold’s stakeholder engagement/CSR team knew nothing about the finance group’s plan to minimize tax by using shell companies, which is a legal – some might say a smart – business strategy. Organizational silos limit interaction across functional areas such as finance and CSR, and this can adversely affect a company’s ability to systematically assess risk. If the

issue of tax savings is considered through the lens of social risk, questions might have been raised. A financial assessment of the benefits of tax savings could be compared to the risk that the strategy could further exacerbate company-community conflict, and to the financial cost of delays to the projected commissioning date. Previous incidents of public outrage over non-domiciled tax strategies employed by companies such as Starbucks in the United Kingdom, and BMW and Coca-Cola in Greece, should serve as a red flag risk for a project already experiencing negative publicity. Examples, such as the Eldorado Gold situation, highlight the need to assess risk holistically through the lens of legal, financial, and operational risk, as well as reputational risk, to enhance the probability that a project will proceed on schedule and on budget.

3.4.8 Taseko's New Prosperity Project: Indigenous Rights and Environmental Issues

In Canada, Taseko Mines Limited has spent upwards of \$100 million and 20 years attempting to earn regulatory approvals for a gold-copper project in the Caribou-Chilcotin region of British Columbia. As noted in Chapter One, Canada's western most province is the birthplace of Greenpeace and a region with an accomplished environmental record. Forestry, mining, climate change, and oil transportation, are all prominent issues for both the resource sector and NGOs. The result is that NGOs and civil society are stakeholders – and frequently vocal opponents – to resource sector development in the region. British Columbia is also an area of mostly unsettled aboriginal treaties, a situation that can create challenges for companies looking to secure a social license to operate.

Taseko initiated the provincial regulatory review process for the Prosperity Mine in 1995. In 2010, the government of British Columbia completed its review and granted an environmental assessment certificate. However, the federal government, whose approval was

also required, rejected the project stating that the economic benefits would not offset the significant adverse effects the mine would have on fish and fish habitat (CEAA, 2013). Taseko was invited to address the concerns and re-submit the application, which the company did in September 2012. While Taseko was attempting to rework the mine plan to reduce its environmental impact, opposition to the project was continuing to build amongst First Nations who consider Fish Lake – which Taseko wished to drain for use as the mine’s tailing storage facility – to be a sacred place of spiritual importance.

The adjusted plan for the “New Prosperity” Mine was submitted for review in September 2102. The most notable change was the decision to preserve Fish Lake and portions of its tributaries by relocating the tailings storage facility 2.5 kilometres upstream. In anticipation of receiving the updated project plan, the federal government appointed a three-person review panel to consider the application. Following public hearings in the summer of 2013, the province approved the project, drawing attention to the 550 direct jobs that would be created in an economically depressed area. However, the federal review panel remained concerned, concluding the New Prosperity project “would result in several significant adverse environmental effects; the key ones being effects on water quality in Fish Lake (Teztan Biny), on fish and fish habitat in Fish Lake, on current use of lands and resources for traditional purposes by certain Aboriginal groups, and on their cultural heritage. The Panel also concludes there would be a significant adverse cumulative effect on the South Chilcotin grizzly bear population, unless necessary cumulative effects mitigation measures are effectively implemented” (Federal Review Panel, 2013, p. 13).

In an interview with CBC News, Taseko's vice president of corporate affairs stated that the panel had based its review on an incorrect design of the tailing storage facility provided by Natural Resources Canada and had made an error "so outrageous as to be nearly unfathomable" (CBC, 2013). While Taseko launched a judicial review, the review panel's report made its way to the office of the federal Ministry of Environment for a final ruling, sending a rallying cry to supporters and opponents who journeyed to Ottawa to lobby federal government decision makers. Where British Columbia's Minister of Energy and Mines advocated for project approval, Tsilqot'in tribal chairman Joe Alphonse warned "the province is on a path to all out conflict with First Nations over aboriginal rights" (Canadian Press, 2013).

On February 26, the Canadian Environmental Assessment Agency (CEAA) issued a news release noting that it based its decision on "the best available scientific evidence while balancing economic and environmental considerations" (CEAA, 2014). CEAA endorsed the findings of the review panel and once again invited the company to submit another proposal that would address concerns. The company's reaction was swift. A company spokesperson declared the review process was flawed and announced Taseko's intention to seek the court's support to overturn the ruling.

Throughout 2016, the \$1.5B copper/gold project remained stalled, prompting the company to initiate a suit against the federal government for unspecified compensation and to lobby the provincial government to amend the project's environmental certificate. According to the Globe and Mail, "amending the certificate would allow Taseko to pursue the project through a narrow process that requires a review of proposed changes only, and not another full environmental assessment" (Hume, 2016). The provincial government decision to re-examine

the project surprised the Tsilhqot'in National Government, which remains opposed to the project, with Yunesit'in Chief Russell Myers Ross stating,

“Teztan Biny [Fish Lake] is preserved as a cultural area, in the headwaters of one of the most diverse ecosystems in Canada. It is the Tsilhqot'in Nation's intent to keep it that way.” (Lamb-Yorski, 2016)

The case highlights the importance of working with stakeholders early in the process to understand concerns. The company's amended application demonstrated it was technically feasible to locate the tailings facility in a location other than Fish Lake, an area of spiritual significance to local First Nations. Given the fact that the project remains in limbo 20 years after filing the first permit applications suggests that the reputational damage done by failing to acknowledge local interests and attempting to offset environmental concerns with the promise of jobs will be difficult – if not impossible – to overcome.

3.4.9 Tía María: Agros Si, Mina No!

The country with the highest number of recorded company-community conflicts during this study period is Peru. A resource-rich nation, in 2015 Peru was the third largest global producer of copper, silver, and zinc, the fifth largest gold producer (Brereton, Arts, & Sturman, 2016), and holds the second largest known copper reserves in the world (KPMG International, 2013, p. 2). There are several candidates for the title of most contentious or egregious mining conflict in Peru. One would be Newmont's Conga mine where five people were killed in 2012 when police used live ammunition to quell protesters, and which was suspended for a year in 2013 after the national government imposed a state of emergency. Another might be Las Bambas mine, which MMG acquired from Xstrata, and where four people were killed in protests in 2015 with

violence continuing in 2016 and 2017. Yet, in 2015, The Guardian newspaper branded the US\$1.4 billion Tía María project as Peru's biggest mining conflict (Hill, 2015).

The license for Tía María's 32,990-hectare concession is owned by Southern Copper, one of the largest integrated copper producers in the world, and a company which claims to hold the largest copper reserves in the world. Established in 1952, the American company merged with Mexican copper producer Minera Mexico in 2005 and today the amalgamated company's stock is publicly traded on the New York and Lima stock exchanges. All Southern Copper's mining, smelting, and refining facilities are in Mexico or Peru. The company's website (www.southerncoppercorp.com) states Southern Copper employs 13,024 people, had sales in 2015 of \$5.05 billion, net revenue of \$0.74 billion and a market capitalization of \$21.49 billion¹⁹. In the company's 2015 annual report it is noted, "We are a responsible social company". Reading the company's annual report and 10K²⁰ report gives little hint of the conflict Tía María has generated in the Tambo River Valley of the Cocachacra district in southern Peru. Nor is there any mention of the fact that the Tía María project has been suspended since 2011 following violent protests that left four people dead that year, prompting the government of Peru to declare a state of emergency.

The 2011 protests were generated by concerns following the approval of Tía María's first environmental impact assessment (EIA). Like many other mining-community conflicts, an issue driving opposition to the proposed copper mine was competition for water and concerns

¹⁹ As of November 1, 2016

²⁰ The U.S. Securities and Exchange Commission (SEC) requires companies traded on the stock exchange in the United States to file an annual 10-K report that provides a comprehensive summary of a company's financial performance.

about potential water contamination. The Tía María mine was to be located two kilometres above the Tambo Valley, a fertile agricultural region. The company's intention to use ground water to supply the mine was met with fierce opposition from farmers concerned the mine would contaminate the local river, adversely impact underground water sources, and destroy local crops. The Cocachacra district, where the mine would be built, is home to commercial farmers (not indigenous peasants), has basic services, and is considered relatively prosperous. The company's promise of 3500 construction jobs plus 600 direct and 2000 indirect jobs during the 20-year life of mine seemed to have little appeal. In addition, Southern Copper has been operating in the region since the 1960s and their reputation does not appear to have engendered trust that Tía María would not have environmental impacts. The company operates the Toquepala and Cuajone copper mines and the Ilo smelter and refinery, all located in southern Peru, close to Tía María. Advocacy group websites, such as www.truth-out.org, point to the company's poor environmental record. For 35 years, the Ilo refinery used riverine tailings, resulting in contamination, most notably to the nearby Ite Bay. In 1967, the company was given six months to halt emissions of sulphur dioxide from the refinery and to compensate locals for air pollution. No action was taken until 2007 (Economist Intelligence Unit - Executive Briefing, 2016). That same year the company was found to have sea discharges with elevated arsenic levels.

To help instill confidence in the mine review process, the Peruvian government agreed to have the United Nations Office of Project Services (UNOPS) review the EIA. However, shortly before the UNOPS report was due, the government cancelled the contract. A copy of the report was leaked to the Tambo Valley Defense Front, a group established by communities

along the Tambo River opposed to the mine. Among the UNOPS findings was that the EIA did not contain a hydro-geological study and that the proposal called for using water from an estuary. This contradicted the company's claim that it would use sea water to address community opposition to the mine accessing groundwater for operations.

Following deadly protests in 2011, the company went back to the drawing board, revising the EIA, and resubmitting it in 2014. Southern Copper now pledged to build a desalination plant to source water for mining operations. But locals again took issue, with SML Metals and Mining Daily reporting 15 January 2014 on a situation of extreme tension in the Tambo Valley, where one public hearing for the EIA was attended by 3000 residents and 4000 armed police.

To earn support for the project, Southern Copper,

“established a multi-faceted encounter plan, which began with a national media campaign, followed by a door-to-door campaign in the neighboring district of Cocachacra. The purpose of the campaign was to explain the relevant environmental aspects of the project and answer questions. Tía María will use desalinated seawater and SX/EW technology with the highest international environmental standards, which are considered the most environmentally friendly in the industry, as no emissions are released into the atmosphere. We trust that we will soon receive the necessary construction licenses and permits required in order to begin construction of Tía María.” (Southern Copper Corporation, 2015, pp. 2-3)

But the effort appears to have done little to assuage local concerns. In March, Julio Morriberon, the local spokesperson for Southern Copper told a Peru radio station that Southern Copper was cancelling Tía María and withdrawing its investment due to the opposition of “a violent minority”. His comments were quickly recanted by the company which pledged to push ahead, despite labelling the protests “anti-mining terrorism”. Then, on May 9, 2015, the lawyer for Southern Copper and the leader of the Tambo Valley Defense Fund were caught on tape

discussing a \$1.5 million bribe Southern Copper could pay to end the strife²¹. As the conversation went public, protests were once again planned. The first two days appear to have been relatively peaceful but then the international media began reporting the presence of hundreds of police in riot gear. As the week wore on, three demonstrators and one police officer were killed, with 200 protesters and 100 police were injured. On May 23, the president of Peru declared martial law and imposed a two-month state of emergency.

When Southern Copper filed its 10K report for 2015, the Tía María situation was described as follows:

Our mining or metal production projects may be subject to additional costs due to community actions and other factors. In recent years, worldwide mining activity has been pressured by neighboring communities for financial commitments to fund social benefit programs and infrastructure improvements. Our projects in Peru are not exempt from these pressures. Our Tía María project in Peru has experienced delays while trying to resolve difference (sic) with community groups. It appears that it is becoming a part of the Peruvian mining environment that in order to obtain acceptance from local communities for projects in their localities, demands for substantial investments in community infrastructure and upgrades must be met in order to proceed with the mining projects. We are confident that we will move forward with the Tía María project. However, we cannot assure you when and that we will not continue to incur additional costs for community infrastructure²² and upgrades in order to obtain the approval of current or future mining projects.” (p15)

There is no mention in any company material of the reason for the delays, the death of another three people in 2015, or of the level of opposition Tía María was encountering. In a

²¹ "Tía María: Piden a Pepe Julio Gutiérrez que se aleje tras difusión de audio." Peru21 (9 May,2015). Available online at:<http://peru21.pe/actualidad/tia-maria-piden-pepe-julio-gutierrez-que-se-aleje-paro-audio-2218480> .

²² In 2014, the company had offered to establish a \$29 million fund to invest in social and infrastructure improvements in the communities surrounding Tia Maria

presentation to an investors conference in September 2016, the company rated Tía María as a probable project and it remains listed on the Southern Copper website.

“We expect to be granted the authorization in the first quarter of 2015 to move forward with the construction phase and begin construction immediately thereafter. This project will be completed in the first half of 2017 with an investment of approximately \$1.4 billion to produce 120,000 tons of copper cathode per year using state of the art technology with the highest environmental standards.”

(<http://www.southerncoppercorp.com/ENG/intope/Pages/PGIntOperation.aspx>)

Locals have a different view. In May 2016, Reuters news agency quoted presidential candidate contender Keiko Fujimori saying that it would take "many years" for Southern Copper Corp to earn social consent for the mine from local citizens. "Farmers in the Tambo Valley of Cocachacra obviously feel deep distrust, and it will take many years for the company to regain that trust," Fujimori said. (Reuters, 2016). While Fujimori was unsuccessful in her bid for the presidency her assessment of the Tía María situation is echoed by others. In the fall of 2016, nearly all the houses in the Tambo River Valley were adorned with bright green flags bearing the slogan “Agros si, mina no!” (Farming yes. No to the mine). And Jesus Cornejo, president of the water-users’ committee in Cocachacra, has said “The conditions will never exist for the company to operate.” (Economist Intelligence Unit - Executive Briefing, 2016). These views are consistent with academic theory whereby a corporation’s past shapes its public reputation and where companies with a known, or even perceived, history of wrong doing often find that new projects are problematized (Schrempf-Stirling, Palazzo, & Phillips, 2016).

Southern Copper has not publicly disclosed the dollar value of the loss of delayed production in net present value terms but the project was originally meant to start production

in 2012. As of early 2017, the required construction permits and licenses had not been issued by the Peruvian government suggesting it will not be possible for the project to come into production in late 2017, or early 2018, as predicted by Southern Copper's president, Oscar Gonzalez Rocha, in April 2015. Yet Southern Copper does not appear unduly concerned about the ongoing unrest. The government proposed setting up a dialogue table to resolve differences with community groups – a tactic employed effectively elsewhere. (E.g. Anglo American's Quellaveco project in Peru). The company has indicated it believes the approach could help to expedite construction permits, but many residents appear unwilling to join a dialogue table to negotiate a path forward for a project they fundamentally oppose.

Southern Copper's effort to earn approval for the project appears to reflect standard public relations approaches to corporate social responsibility: an advertising campaign, a door-to-door public relations exercise, a philanthropic investment fund, and finally bowing to public pressure to build a desalination plant, and then promoting the choice as evidence that the project should proceed.

The project will only use seawater, transporting this more than 25 kilometers and at 1,000 meters above sea level, constructing a desalinization plant representing an investment of \$95 million. In this manner, we guarantee that the Tambo river water resources and the water resources from the wells of the areas will be used solely for farming and human consumption, as it has been done until today. Tía María has complied with all existing requirements and regulations and therefore the Company trusts that it will soon receive from government authorities the construction licenses and permits required in order to begin construction of this project (Southern Copper Corporation, 2015 pp 20-21).

Southern Copper is not alone in its approach to community relations. As was suggested in Chapter Two, the most common approaches to CSR in the mining sector can be grouped in two categories: philanthropy (the redistribution of wealth via donations,

sponsorship, and community investment) and performance optimization (doing well by doing good – for example, energy savings, emissions reduction, local training, procurement, or in this case, building a desalination plant). However, the fact that incidents of conflict in the mining sector are increasing suggests these popular approaches to CSR are not delivering value to communities. Is there an opportunity for companies to reduce mining-community conflict by augmenting standard philanthropic and performance optimization measures with policies and practices that enhance the competitiveness of a company while advancing the economic and social conditions in associated communities (Porter & Kramer, 2011, p. 65)? If mining companies reframe CSR, could a win-win approach offset social risk?

3.5 Discussion

The media analysis suggests that company-community conflict is occurring in situations where companies are compliant with regulatory and legal requirements and despite presumed initiatives by mining companies to earn social acceptance. As other scholars have noted, mining-community conflict can be experienced at any stage of the project life cycle from exploration to permitting and construction, and during operations and reclamation (Davis & Franks, 2014). The coding of the causes of conflict suggests the root of much mining-community disagreement is value-driven, reflecting low trust levels and the poor reputation of mining companies, as well as concern about loss of “community control over the ability to shape a future consistent with their own vision” (Franks D. , 2009). This finding appears to support hypothesis #1: Increasing incidents of mining-community conflict are resulting from a failure on the part of mining companies to meet community expectations for sustainable outcomes.

The number of conflicts intensified during the study period, which coincided with a tumultuous time in the global mining sector. In the years examined, mining companies grappled with fluctuating demand and commodity prices, revenues, and profits; increasing costs and debt levels; and the financial demands of developing low-grade deposits in remote and inhospitable regions. Furthermore, the time for new projects to come on stream increased significantly in the decade from 2005 - 2015, adding to overall project costs, with stakeholder risk constituting the single largest non-technical risk category faced by mining companies (ERM, 2014).

The cumulative impact of financial, technical, and social risk is diminished value for mining projects around the world. At the end of 2014, the market capitalization of the 40 largest listed mining companies was 50 per cent of the value of those firms four years earlier, and return on capital employed fell to its lowest level in 10 years (PriceWaterhouseCoopers, 2015, p. 13). An illustration of the industry's turmoil is provided by Anglo American, once one of the five largest mining companies in the world. In 2016, Anglo saw its market capitalization shrink to \$5 billion, down from \$67 billion in 2011. As a result, the company announced it would lay off more than 50,000 people worldwide and move from 55 mines at the end of 2014 to 16 in 2016 focussing on just three commodities: diamonds, copper, and platinum (York, 2016).

Lack of public acceptance of mining projects may impose one of the most serious financial consequences. As noted in Chapter Two, researchers focussing specifically on the costs of company-community conflict reported that a "major, world-class mining project with a capital expenditure of between \$3-5 billion [may] suffer costs of roughly \$20 million per week

of delayed production in net present value terms” (Davis & Franks 2014, p.8). And the impact is not only to companies. In 2014, it was predicted that resistance to mining projects in Peru, which experienced the largest number of conflicts in the study period, would cost the country \$57 billion in foreign investment (Jamasmie, 2014).

3.5.1 Current Approaches to CSR

The findings from the media analysis raise questions about whether the companies experiencing mining-community conflict are engaged in CSR initiatives, and the efficacy of current approaches when assessed as a tool to reduce social risk and secure social permission. If companies experiencing multiple situations of mining-community conflict have CSR programs, the finding would support hypothesis #2 that traditional corporate social responsibility programs, grounded in philanthropy and other forms of transactional stakeholder engagement, are not effective at reducing mining-community conflict, and are failing to offset the perceived inequitable distribution of risks, impacts, and benefits of mining.

To examine this hypothesis, companies that experienced conflicts in three or four years of the study period were investigated to determine if the companies in question had a CSR and/or sustainability program, and if the program had earned the company a place on CSR performance indices. The criteria for evaluation included six metrics serving as proxies for sustainability and social responsibility.

1. Membership in the ICMM.

Rationale: Membership in industry associations has been found to support socially responsible behaviour (Campbell, 2007). The ICMM is an international organization dedicated to improving the social and environmental performance of the mining and

metals industry. Members are required to meet a best-practice framework for sustainable development in the sector.

2. Ranking on the Dow Jones Sustainability Index (DJSI)

Rationale: Launched in 1999, the DJSI was the first globally recognized index evaluating sustainability performance. Only the top ranked companies in terms of corporate sustainability within each industry are selected for inclusion.

3. Publication of a report that meets the requirements of the Global Reporting Initiative (GRI).

Rationale: Sustainability reporting is a demonstration of a company's commitment to measure and share its environmental, social and governance (ESG) performance year-over-year. The GRI, an independent organization, pioneered sustainability reporting in the late 1990s and today offers the world's most widely used reporting standards and protocols.

www.globalreporting.com

4. A Board of Director's committee focussed on sustainability, community relations or social responsibility.

Rationale: The increase in mining-community conflict, the costs associated with delays to production or impediments to operations, and the potential for reputation damage suggest that this form of risk has become material. Companies seeking to proactively address this risk are likely to benefit from the guidance of Board members. In addition, the presence of a Board level committee for CSR/sustainability signals that the issue is a priority for the organization.

5. CSR Hub rating

Rationale: The CSR Hub (<https://www.csrhub.com/>) purports to be the world's largest sustainability business intelligence database. CSR Hub scores companies against their sector peers on four variables: community (community development and philanthropy, products, and supply chain); employees (compensation and benefits, diversity and labour rights, training, health, and safety); environment (energy and climate change, environment policy and reporting, resource management); and governance (board, leadership ethics, transparency, and reporting) to enable users to benchmark, evaluate, and improve sustainability performance.

6. Company website CSR/sustainability section

Rationale: Evidence of public commitment to share information and to generate sufficient relevant content to populate a web page.

The findings are summarized in Table 3.7

Company	CSR Indicator					
	ICMM Member	DJSI Member	GRI report	Board CSR Committee	Average for 530 mining companies ~ 52	Company website CSR section
Adani Group	No	No	No	No	48	Yes
Anglo American	Founding member	Yes	Yes	Yes	61	Yes
Barrick	Member since 2008	Yes	Yes	Yes	57	Yes
Centerra	No	No	2013	Yes	49	Yes
Glencore Xstrata	Member since 2014	Invited 2017	Yes	Yes	57	Yes
HudBay	No	No	Yes	Yes	56	Yes
Newmont	Founding member	Yes	Yes	Yes	58	Yes
Rio Tinto	Founding member	Yes	Yes	Yes	57	Yes
Southern Copper	No	Invited 2017	Yes	No	46	Yes
Vale	No	Invited 2017	Yes	Yes	57	No
Vedanta	No	Invited 2017	Yes	Yes	57	Yes
Wanbao	No	No	No	No	Not rated	No
Whitehaven	No	Invited 2017	No	Yes	55	Yes

Table 3.7 – CSR performance ratings. Companies involved in conflicts in three or four years of the study period assessed against CSR performance ratings. Highlighted rows flag companies scoring positively on all six metrics.

The analysis suggests all companies but one (Wanbao) are engaged in CSR activities, with four companies – Anglo American, Barrick, Newmont, and Rio Tinto – scoring positively on all six metrics. This public commitment to CSR/sustainability by the companies that have experienced the highest number of conflicts in the study period raises questions about the

effectiveness of current approaches to corporate social responsibility. It is suggested that while these efforts may contribute to trust building, they do appear to be effective at reducing mining-community conflict.

Global management consultancy, McKinsey, posits that a driver of community dissatisfaction is the failure of mining projects to transform resource wealth into sustainable community development (Dobbs, et al., 2013). As noted earlier, CSR is often viewed by companies as a sunk cost – one that does not generate a return. During the recent downturn in the mining sector, have CSR budgets been reduced? And if so, could this be exacerbating conflict as community expectations go unfulfilled?

Table 3.8 lists the community investment budgets of the four companies from the media analysis that experienced serious conflict situations at one or more of their projects every year of the four-year study period. Each company also scored positively on each of the six metrics for social responsibility. Also in common, each company is publicly traded and has global operations. In each case, community investment budgets for 2015 are lower than 2012. While it is not possible to generalize findings from such a small sample, it seems probable that if those companies with the strongest commitment to CSR are reducing their budgets during a period of fiscal constraint, others with less commitment to CSR may be doing the same. The effect of this reduced funding, in combination with questions about the efficacy of current approaches to CSR, appears to support hypothesis #3: Companies need to take a more strategic approach to stakeholder engagement and social responsibility. The results of the media analysis provide a rationale for exploring the proposition that mining-community conflict could be reduced by augmenting standard philanthropic and performance optimization

measures with a more purposeful approach to CSR, linking business objectives with social needs. This theory is examined further the next chapter. (It must be noted that Anglo American and Rio Tinto, as will be demonstrated in Chapter Four, are exploring ways to augment standard philanthropic and performance optimization measures with policies and practices that enhance the competitiveness of a company while advancing the economic and/or social conditions in mining communities).

Company (Mkt cap 07/2016)	Community investment as reported in company sustainability or 10K ²³ reports			
	2012	2013	2014	2015
Anglo American (\$11.55B)	\$145.7M	\$127.5M	\$135.8M	\$124.1M
Barrick (\$24.94B)	\$54.4M	\$51.6M	\$27.0M	\$37.8M
Newmont (\$22.32B)	\$95M	\$56.7M	\$27.9M	\$28.0M
Rio Tinto (\$79.45B)	\$291M	\$332M	\$264M	\$184M

Table 3.8: Corporate community investment budgets YOY 2012 – 2015

3.6 Conclusions

The media analysis undertaken for this research indicates incidents of serious mining company-community conflict increased by nearly 50 per cent in 2015 compared to the previous three years. These situations are affecting a growing number of companies and are occurring in a growing number of countries, including those that would not typically be considered high-risk, and that have a history of mining as a contributor to regional and national economic growth.

²³ The U.S. Securities and Exchange Commission (SEC) requires companies traded on the stock exchange in the United States to file an annual 10-K report that provides a comprehensive summary of a company's financial performance.

While there is evidence that mining companies are increasingly recognizing the importance of corporate social responsibility, good intentions on the part of business appear not to be sufficient to reduce mining-community conflict. The media analysis raises questions about the current approaches to CSR and suggests the complexity of conflict and seriousness of repercussions necessitates a comprehensive, multidisciplinary, and integrated approach. Slack (2012) and Hodge (2014) note a paradox in the mining sector: despite extensive rhetorical commitment to CSR, mining company efforts have not served to reduce conflict. The proposition this research explores further in the next chapter is that CSR needs to be reframed to address the interdependence of mining and community, breaking the current tension between the two, and embedding CSR as a strategic business imperative rather than a public relations function.

The next chapter examines an underlying cause of much mining community conflict – a lack of trust – and discusses several of the conflict situations profiled in the media analysis to continue the investigation into CSR as a strategy for social risk management. This will set the stage for a case study, described in Chapter Five, that examines an approach to CSR that is more purposeful and addresses a shared business and social need.

Chapter 4: The Trust Deficit and the Opportunity of the SDGs

The Barrick, Eldorado Gold, Taseko, and Southern Copper projects profiled in the previous chapter illustrate what can go wrong between companies and communities. Unfortunately, there are many more, and many more egregious, cases that merit investigation in future studies. This research now moves in a different direction to consider two questions arising from the media analysis. Why are mining companies not trusted by their stakeholders? What can mining do to address the trust deficit? It seems clear that many mining companies have CSR programs in place and are sharing information to demonstrate social, environmental, and economic performance. Yet, despite a proliferation of reporting protocols and frameworks to benchmark performance, these tools do not appear to be effective at reducing the trust deficit experienced by mining companies.

Low trust levels are not unique to mining or the broader extractive sector. Research shows that trust in government, business, industry, the media, and even non-governmental organizations, has declining broadly in the past decade (Edelman, 2017). This chapter explores the finding that much mining-community disagreement is value-driven, reflecting a dissatisfaction with current approaches to community beneficiation. It is noted that the conflicts under discussion are typically the result of interplay between multiple parties and the causes are complex. Nevertheless, the Chapter Three analysis posits that a lack of trust is a contributor to mining-community tensions. The hypothesis explored in this chapter is that the best way to build trust in mining is to align business with the values of society. “It may well be true that companies are poorly suited to respond to illiteracy or contaminated water, problems to which, in addition, a company has not contributed. But it may nonetheless be that corporate

efforts to ameliorate these problems are at least permissible, if not obligatory” (Margolis & Walsh, 2003, p. 293). Within this chapter, several projects selected to illustrate the opportunity offered by the UN 2030 Sustainable Development Goals are profiled.

4.1 Trust, Credibility, and Reputation

Like other terms used in this research, the definition of trust is contested, with no universally accepted scholarly definition (Rousseau, Sitkin, Burt, & Camerer, 1998). The Webster dictionary suggests trust is a reliance on the honesty, integrity, and reliability of a person or thing. Yet conflated definitions – ranging from co-operation, confidence, and predictability – have obfuscated the nature of trust (Mayer, Davis, & Schoorman, 1995, p. 712). Hosmer’s 1995 article provides an overview of the various definitions of trust, concluding that an underlying assumption is that trust is a moral duty with a strong ethical component (p.381). It is known that the need for trust arises in risky situations but it is unclear if risk is an antecedent to trust. For example, trust is not necessarily taking a risk, but a willingness to take a risk. In Mayer, Davis and Schoorman’s widely cited 1995 article, they propose a model of trust built upon three pillars: ability, benevolence, and integrity. Ability is defined as possessing skills, expertise, and competency within a specific domain. Benevolence is based upon altruism, philanthropy, loyalty, and the notion of “do no harm”. Integrity is built by actions congruent with words and by consistent behaviour. Trust is contingent on the inter-relationship between these three characteristics. In this research, Rousseau et al.’s (1998, p.126) observation, that public trust represents an aggregate perception of trust to a single entity, is accepted. With this in mind, the following definition of public trust will be used: “the degree to which external stakeholders,

such as the public, hold a collective trust orientation toward an organization” (Poppo & Schepker, 2010, p. 124).

The enduring nature of Mayer, Davis and Schoorman’s trust model is evident in the work of Globescan, a global public opinion agency. Globescan has been measuring citizens’ perception of business and its role in society for 20 years. Trust, which Globescan labels a complex and scarce commodity, has emerged as a key theme. Within the past decade, trust in business has been low and volatile. Trust in the mining sector declined in 2016 to -7 (negative net trust) versus -3 in 2015, with many respondents²⁴ unable to name a respected mining company (Globescan, 2016). In Australia, a resource-rich country and home to BHP Billiton, the world’s largest mining company²⁵, 50 per cent of respondents could not name a single mining company they respected. The negative seven trust rating falls further when individual countries are segmented from global findings. On a country-by-country basis, trust in mining companies ranged from a high of +39 in Indonesia to a low of -29 in Greece. The five countries identified in Chapter Three as having the highest number of incidents of conflict scored as follows: Chile +11; India -10; Peru -11; Canada -16; and Mexico -21 (Globescan, 2014).

A challenge for mining companies, especially large, multi-national organizations, is ensuring that actions and behaviour across the organization are aligned with core values. As we have seen, consistency of behavior is a trust driver and contributes to integrity. Any inconsistency between local operations and head office can erode public trust. As Poppo & Schepker (2010) note, “institutional controls [for trust] cannot perfectly fulfil their agency

²⁴ N=1000 adults in 24 countries

²⁵ By market capitalization in 2015

function” (p. 128). This is problematic because while trust is difficult to develop it can be compromised, or lost, with one unethical or untrustworthy action. And in today’s hyper-connected world²⁶, incidents of deficient performance, or perceived corporate malfeasance, are known by a much larger group than just the immediately impacted stakeholders. The resulting awareness of inconsistency between head office claims and local actions, and the past behaviour of a company or its predecessors, erodes fragile trust levels.

There are two related challenges. Many mining projects are often discovered by one individual, group, or company, then built, operated, and decommissioned by others. My observation from applied practice is that while transferring assets in mergers and acquisitions is relatively straightforward, trust is not as easy to value or to transfer. Furthermore, transferring trust along a social chain of custody within a single project, that can involve different leaders with different teams at various stages of mine development, can be problematic. The second challenge to trust in mining companies is that many stakeholder groups may have a credibility that industry lacks. In the 2016 Globescan report, respondents²⁷ were asked how much they trusted institutions to operate in the best interest of society. NGOs scored 30 points indicating these groups were highly trusted while global companies scored zero. When company statements conflict with the views of stakeholder groups trusted because they are working to protect the public’s interest, rather than corporate self-interest, the company will not be trusted. In controversial situations, low trust levels and the credibility of business and industry

²⁶ BSR consultants presenting at the 2016 Mining and Communities conference noted that in the past 10 years, 80 billion devices have been connected to the internet

²⁷ N = +1000 adults in 25 countries

can be further compromised. In these situations, concern runs high that corporate interests could trump the democratic rights of community residents, and could create an ethical dilemma if business interests are perceived to be in opposition to community interests (Fraser, 2006, p. 8). A further complicating factor is that when trust is lost, the precautionary principle²⁸ is often evoked (Fischhoff, 2015) making it difficult to earn social consent to build new projects or expand existing mines.

The Globescan findings are mirrored in the work of international public affairs consultancy, Edelman, which has been surveying trust for 16 years. Their annual *Trust Barometer*, referenced in Chapter Two, polls 33,000 people in 28 countries. The 2017 report documents a global decline in trust for business, government, the media, and NGOs. Fifty per cent of respondents stated that a reason trust in business was declining was a failure on the part of business to contribute to the greater good (Edelman, 2016). These findings prompted Edelman to call for trust to be regarded as an essential line of business. Globescan has suggested current conditions suggest trust should be considered as its own risk category.

Having established that trust in mining is low, the question becomes, what can be done? To consider how mining companies can rebuild trust, the CSR continuum, introduced in Chapter Two, is revisited. Mayer, Davis and Schoorman equate trustworthiness to a continuum, where trust evolves within the relationship (1995, p. 721). By placing trust within the CSR continuum, several interesting observations can be made. It is suggested that little

²⁸ Defined by the Canadian Environmental Law Association as the duty to prevent harm. The precautionary principle is called upon in situations where project proponents cannot guarantee there is zero risk to the environment or people from the proposed operations.

trust is required for transactional CSR, epitomized by one-way giving. Transactional CSR can be implemented without any form of engagement yet this redistribution of wealth can introduce the company to some of its stakeholders and therefore initiate trust-building. (Figure 4.1). As those relationships evolve, trust may grow. The second stage on the continuum, transitional CSR, benefits from two-way engagement and, as it seeks to drive value, community involvement strengthens the process. Trust is helpful in this stage to identify appropriate initiatives. For example, environmental performance measures must be viewed as trustworthy by stakeholders, and institutional trust is required for contracts between a mining company and local suppliers. Once again, if the experience of the parties involved is positive, the trust continuum will advance. Transformative CSR requires collaboration between business and society and is only achievable in situations when trust, built from personal relationships and conjoined benefits exists (Bowen, Newenham-Kahindi, & Herremans, 2010, p. 306). High trust is required to fulfill these CSR strategies, which require organizational effort by all parties involved. In 2017, Edelman asked *Trust Barometer* respondents to agree or disagree with the following statement: a company can take specific actions that both increase profits and improve the economic and social conditions in the community where it operates. The fact that 75 per cent agreed suggests there is a base on which to build more transformative CSR approaches.

RESIDUAL CSR SHORT-TERM (1 – 5 years)		VALUE-ADD CSR LONG TERM (5+ years)
TRANSACTIONAL	TRANSITIONAL	TRANSFORMATIVE
PHILANTHOPIC: ONE WAY GIVING BACK	VALUE DRIVEN: TWO WAY COMMUNITY INVOLVEMENT	STRATEGIC: TWO WAY CHANGING SOCIETY
<ul style="list-style-type: none"> • Sponsorships • Donations • Worthy causes • Community investment 	<ul style="list-style-type: none"> • Doing well by doing good • GHG reduction • Energy savings • Local hire/purchase • Training 	<ul style="list-style-type: none"> • Creating new economic value • Addressing business and social needs
LITTLE TRUST REQUIRED	MORE TRUST REQUIRED	HIGH TRUST REQUIRED

Table 4.1 - Aligning the trust and CSR continuums. Adaptation of Figure 2.2

If trustworthiness moves along a continuum from low to high, and evolves within a relationship, what actions can mining companies take to earn the trust necessary for transformative CSR? Authors of Better Business Better World (2017) suggest the best way to rebuild trust is to realign business with the values of society. In other words, to rebuild the social contract, defined here as an agreement for mutual benefit between an individual or group, the government or community, and the mining company. One of the best known social contract theorist is Jean Jacques Rousseau (1712-1778) who published a treatise on the topic in 1762. But ethicists and philosophers from Socrates (469-399 BC) and Plato (427-347 BC), to Thomas Hobbs (1588 – 1679), John Locke (1632 – 1704), Immanuel Kant (1724-1804) and, more recently John Rawls (1921 – 2002), have contributed to the idea that a just society is one where members are understood to be equal, and people act from moral obligation to duty. For mining companies wishing to rebuild their social contract, they must know their stakeholders, listen to hear concerns, and acknowledge the connection between business and society. “The best companies get these basics right, and then manage to express with great clarity how they

intend to provide a service to society” (Browne, Nuttall, & Stadlen, 2016, p. 208). Zhang et al. (2015) suggest procedural fairness and contact quality are amongst the strongest predictors of trust, with even poor communication being better than none for securing trust. Fischhoff (2015) suggests communication of any sort signals respect for people’s right to know about activities with potential to impact their communities. Companies with a clearly articulated purpose will find it easier to explain how the corporate purpose benefits society. Anglo American’s work with Northwestern University’s Kellogg Innovation Network (KIN) is one example of an industry initiative to transform the traditional business model into one where mining companies become true development partners with communities and other stakeholders. Collaborators in the KIN mining project have launched a Development Partner Framework (DPF). The framework is built upon the idea of a shared purpose between mining companies and their stakeholders, to create prosperity (KIN Global, 2017).

Engagement – to reduce risk, to build trust, and pre-empt stakeholder-driven reactive strategies that can lead to conflict – is a theme found in both academic literature (e.g. Hustad & de Jesus Salazar, 2006, McWilliams & Siegel 2001, Hillman & Keim, 2001) and applied research (e.g. Globescan, 2016; Edelman, 2016; Business and Sustainable Development Commission, 2017).

Stakeholder engagement will actually be increasingly paramount in supporting companies’ journeys to enhanced trust risk management in many ways. Proactive external engagement will ensure better understanding of local contexts, help demonstrate enhanced transparency and inclusiveness, enable joint identification of risks and new business opportunities, or even support and guide the definition and implementation of a company’s corporate purpose. The move towards more innovative, focused and solutions-centred approaches, with the aim to lend value for both the company and society and that demonstrate a progressive shift from engagement to partnership needs to be accelerated. (Guibeleguiet & Bellier, 2017).

Realigning mining with the values of society seems a daunting task in a low trust world. Yet, there are basic business steps to build trust. Behavioural predictability is an essential precursor to trust (see Luhmann, 1979, Poppo & Schepker, 2010). Specific actions companies can take include committing to transparency; paying taxes where revenue is earned; creating good and appropriately paid jobs at the mine site and within the supply chain; reducing the gap between CEO and employee compensation; respecting environmental standards and human rights by embracing a “do no harm” strategy; and, as noted above, engaging with stakeholders to build a more just society. Sharing challenges and acknowledging past mistakes is critical for trust building: companies that only tell stories of success cease to be credible (Browne, Nuttall, & Stadlen, 2016, p. 209). The dichotomy between publicly stated positions of companies supportive of topical social issues while those same companies fund lobbying activities contrary to those positions also undermines trust. For example, companies advocating for climate management while holding membership in the US Chamber of Commerce, which has actively opposed national science-based climate policy proposals (Union of Concerned Scientists, 2012).

Developing a long-term approach to building prosperity requires breaking the short-term cycle of investments, driven by the desire to meet shareholders’ expectations and to secure a social “license”. Replacing the market’s short-term focus with consistent, determined efforts to build trust and create alignment between the success of the company and community development will be challenging. Sustainability leader Paul Polman, chief executive officer of the Dutch-Anglo company Unilever, earned both accolades and derision when he discontinued quarterly earnings forecast for the \$151 billion consumer goods company (Zabarenko, 2012). Polman insists that shareholders benefit when a company has a long-term view to benefit

society. Yet when he disinvited shareholders who did not share that view, Unilever's stock price fell. He speaks frankly of how the decision to embrace a long-term view was difficult for some investors to accept. With time, new shareholders were secured and Unilever now outperforms the sector while delivering substantial social benefit. For Polman, purpose is key. As the co-chair of the Business and Sustainable Development Commission, he has been active in promoting how business can contribute to delivering the UN 2030 Sustainable Development Goals and earn a renewed sense of trust in the process.

4.2 The SDGs and Creating Shared Value (CSV)

The UN 2030 Sustainable Development Goals (Figure 2.3) were introduced in Chapter Two. The 17 SDGs continue, or build upon, goals introduced in 2000 when the UN launched eight Millennium Goals. As noted in Chapter One, because the SDGs were introduced less than two years ago, there is little academic literature on the effectiveness of implementation strategies or how the global goals impact business. Yet business leaders described the opportunities inherent in the SDGs as ranging from improved economic performance, employee attraction and retention, and the creation of more than \$12 trillion in growth opportunities (Business and Sustainable Development Commission, 2017). Mining, which has contributed to many of the problems the SDGs seek to address, is favourably positioned to make a significant contribution to the achievement of many of the global goals.

Mining projects are often located in remote areas and in developing countries. There is the potential for mining to improve existing conditions by creating jobs and economic development, building needed infrastructure, designing education and training programs to reduce inequality, and initiating energy efficiency and environmental protection programs to

correct past performance and to ameliorate the impacts of new projects. Opportunities for mining companies to contribute positively to social change can be found at every stage of the mining cycle with some of the clearest opportunities for advancement found in SDG #1 No Poverty, #6 Clean Water and Sanitation, #7 Affordable and Clean Energy, #9 Industry, Innovation and Infrastructure, and #16 Peace, Justice and Strong Institutions (UN Development Program, Columbia Centre for Sustainable Investment, Sustainable Development Solutions Network, World Economic Forum, 2016).

It has been noted that the SDGs are complex and ambitious, inter-related and inter-dependent, making it difficult to separate one from another. George et al. (2016) warn that business alone cannot address the “grand challenges” embodied in the SDGs, that the targets require collective, collaborative, and co-ordinated effort. This should not be a deterrent to involvement on the part of mining, an industry accustomed to complexity, yet suggests strategy is required to advance the SDGs. The “creating shared value” concept promoted by Michael Porter and Mark Kramer offers one strategy.

“Shared value – defined as policies and activities that measurably improve socio-economic outcomes and improve related core business performance (e.g., decreased operational costs, enhanced productivity, and/or a predictable and stable business environment) – establishes a framework for identifying opportunities to address societal issues and deliver real business value” (Shared Value Initiative, 2014, p. 6). Porter and Kramer have been clear about what CSV is not: it is not about redistributing value previously created (philanthropy); nor is it about personal values, compliance, or balancing stakeholder interests. Instead, it is about finding the points of intersection between the needs of business and society,

then building collaborative partnerships to drive mutual benefit. For shared value initiatives to be successful, there needs to be a defined need not currently being met (i.e. a market failure); the company must have financial resources to fund the initial stages of the collaborative partnership or collective action; the project must be undertaken in compliance with legal and regulatory requirements; and measurable performance indicators must be agreed to by all collaborating parties.

Companies looking to embrace this approach are advised to identify and understand the social need(s) that it is well placed to address; collaborate with external partners with expertise and complementary strengths; then measure the link between the social and business outcomes. The rationale for business working towards the SDGs can be found in the fact that long-term profitability depends on healthy communities. Porter and Kramer acknowledge that creating a shared value strategy is not guaranteed to resolve mining-community conflict, and stress it should not be viewed as the only avenue of engagement (Shared Value Initiative, 2014). However, unlike traditional CSR, which we have seen is vulnerable to cost cutting during times of fiscal constraint, CSV is an economic strategy that is self-sustaining. Three avenues for CSV are proposed. One is to develop, or improve, access to products and services that meet society's needs, thereby creating new market and revenue opportunities. The second is to focus on the social and environmental problems that constrain quality and efficiency within a mining's company's value chain. And the third is to create an enabling business environment – one that improves the operating context (capacity of local suppliers, availability of skilled labour, health care, shared infrastructure, logistics networks, etc.) – to decrease costs, improve quality, and increase the value of a company's assets (Porter & Kramer, 2011). Business results

may include increased revenue, market share, or profitability; secured supply; or, reduced operating costs. Social results can deliver improved nutrition, education, health outcomes and job skills, as well as economic development and environmental improvements (Kramer, 2016).

CSV promotes a “win win” approach to addressing social issues, yet it is recognized that not all situations are conducive to this strategy. Critics of the CSV approach have suggested that CSV will create “win win” projects in a sea of unresolved environmental and social problems (Crane, Palazzo, Spence, & Matten, 2014). There may also be situations where stakeholders do not wish to negotiate trade-offs or collaborative partnerships for projects regarded as inherently unacceptable. The Tía María case discussed in Chapter Three is one example where farmers and citizens of the region do not wish to engage in a participatory dialogue with a company they do not trust for a project that they fundamentally oppose. There are other challenges associated with CSV.

Proponents of the CSV approach stress that to be successful, companies must be in legal and regulatory compliance. Yet academic research suggests that non-compliance with government standards is a key problem of companies that operate in geopolitical contexts where governments either do not or cannot regulate effectively (Matten & Crane, 2005). An associated challenge can arise from government policies and cultural norms that contribute to corruption and a lack of transparency.

Two additional challenges exist for mining companies wishing to use the CSV strategy. Building partnerships to create shared value is likely to be easier for companies where the core business is linked to sectors where public trust exists, or where products have an acknowledged social benefit. For example, companies producing life-saving medications. CSV will be more

challenging for industries, such as mining, with products that have fallen out of favour (coal), are viewed as superfluous (diamonds), or where there is a strongly held opinion that social impacts cannot be mitigated due to world views or values that have the potential to collide with business interests. In addition, mining often occurs in regions that lack basic levels of human development and that lack governance capacity and/or effective political institutions. Yet alignment with all levels of host governments is required to improve macro-economic conditions that CSV seeks to address. This gives rise to a question, what conditions are necessary for CSV to work?

As a business strategy, CSV offers a mean to address complex social problems that are at the root of market failures – situations in which socio-economic conditions prevent conventional business models from succeeding (Kramer & Pfister, 2016). To be successful, mining companies will need to create a list of social issues that intersection with business needs. These are likely to occur in most regions where mining takes place. A principal component of the CSV strategy requires that the initiative selected must deliver benefits to both company and society. To earn internal support, companies need to state with clarity how business operations will be improved by investing to address the selected social issue. Examples include reduced labour costs, improved supply chain efficiencies, or reduced non-technical risk. In the planning stages of CSV projects, it will also be important for the company to consider how any new initiative can complement existing programs or government policy objectives. For example, in the Cerro Verde case, described in Chapter Five, the collaborative water management strategy aligned with a nascent national government policy objective: encouraging mining companies to use treated water for operations. As noted earlier, executing

share value strategies requires partners, and for some mining companies in some operational contexts, this may be challenging. However, using the common agenda of the SDGs should help to address this problem as governments, development agencies, and NGOs have agreed that the SDGs represent social issues that require urgent – and collaborative – action.

The other condition necessary for success of a CSV strategy is a long-term vision. Creating shared value is a multi-year journey. Time is required to embed CSV into business functions and planning processes; to enable participation from non-traditional partners and multi-sectoral alliances; to negotiate reporting metrics; and to model, then measure, realized business and social outcomes. The requirement for a long-term vision is at odds with current market expectations for quarterly financial performance and guidance, but is aligned with both the long-term nature of mining operations and the SDGS agenda.

One mining company that was an early adopter of creating shared value is South African miner, Gold Fields. The company is an ICMM member, has earned a spot on the Dow Jones Sustainability Index (DSJI) each year since 2011, produces an annual integrated report following the Global Reporting Initiative (GRI) framework, and discloses performance data to the CDP. The company's website states Gold Field's corporate purpose is to be the global leader in sustainable gold mining and that creating "shared value" is an increasingly important strategy (Gold Fields, 2017). The company sets key performance indicators (KPIs) for sustainable performance, has them verified by external third parties, and clearly explains all KPIs on the company website, making it easy for stakeholders to access the information.

Although Gold Fields' current mining operations do not face material opposition from their host communities, there is no room for complacency. It takes substantial time, effort and resources to establish and maintain a social

licence to operate and, once it is lost, it is very hard to regain. . . . We are therefore increasingly applying the “Shared Value” approach to promoting community development. This is based on the application of business strategies that deliver commercial and/or operational benefits to the Company, while also delivering benefits to our host communities at the same time. (Gold Fields, 2017)

Gold Fields uses its integrated annual report to profile projects using the shared value approach. Two of the initiatives highlighted in 2015 were associated with the Cerro Corona mine in Peru, the resource-rich country with the largest number of mining community conflicts in the 2012-2015 study period. One project focussed on building the capacity of local suppliers. The other addressed water and the environment. Both projects are briefly described in the company’s annual report. The benefit to the community is explained, followed by a description of the benefit to the company.

It is interesting to note that Gold Fields embraced the “creating shared value” strategy and that the media analysis, reported on in Chapter Three, did not reveal any incidents of serious mining-community conflict impacting Gold Fields’ operations during the study period. The experience of one company over a brief period (2012-2015) cannot be generalized. However, is the use of the CSV approach and the lack of opposition simply a coincidence? The argument made in earlier chapters and revisited here, is that a more strategic approach to community engagement could serve to reduce conflict and rebuild trust in mining. For CSV to work, the points of intersection between business and social needs must be identified. The SDGs offer a framework for finding areas of mutual interest. Michael Porter has said that the ambitious agenda of the SDGs, which can only be achieved with collective action, offer a “fantastic framing for CSV” (Porter M. , Lecture notes, 2016). Two barriers to CSV are a lack of trust, which hinders collaboration, and a lack of alignment with host governments. Both can be

addressed by the SDGs, which have been endorsed by business, industry, government, communities, NGOs, and development agencies. Within mining companies, the SDGs can serve to initiate discussion about business purpose and strategy. Externally, the multi-stakeholder collaboration required by the SDGs offers mining a pathway to rebuild trust as industry works together with others to achieve mutually shared interests.

4.3 The SDGs: An Opportunity to Restore Trust in Mining via Collective Action

As noted previously, societies everywhere are facing significant social, environmental, and economic challenges. Governments, NGOs, and CSOs lack sufficient resources to resolve these problems on their own. More frequently than many other sectors, mining takes place in areas lacking basic human development and effective political institutions (Shared Value Initiative, 2014, p. 21), making industry well positioned to forward the SDG agenda. Furthermore, mining companies have expertise, access to capital, and networks to contribute to solutions. The SDGs provide an agenda that has been endorsed by multiple stakeholders. While CSV is proposed as a business strategy to advance the SDGs, a concept more familiar to potential partners may be collective action: long-term commitments by a group of actors from different sectors working to a common agenda to solve a specific social problem or issue. Working together to advance the SDGs seems to present an opportunity for mining companies to earn trust. Because the focus of collaboration will be on the SDGs, mining companies can have a seat at the table, rather than being at the centre of the debate. This change to the traditional consultation model, illustrated in Figure 4.2, should build trust and reduce social risk as stakeholders work towards a common objective. For this model to be effective, questions remain about which group is best positioned to convene and lead the collective action. This is an area for future

research. It is suggested that conveners and leaders may be separate groups. It is further proposed that the best party to lead the partnership will be the one that is most trusted. It, therefore, must be noted that trust in industry, government and the NGO sector is likely to vary based on the geographic area of focus. In addition to trust, the selection of the leader will also need to consider who is best positioned to lead on the SDG at the centre of each project.

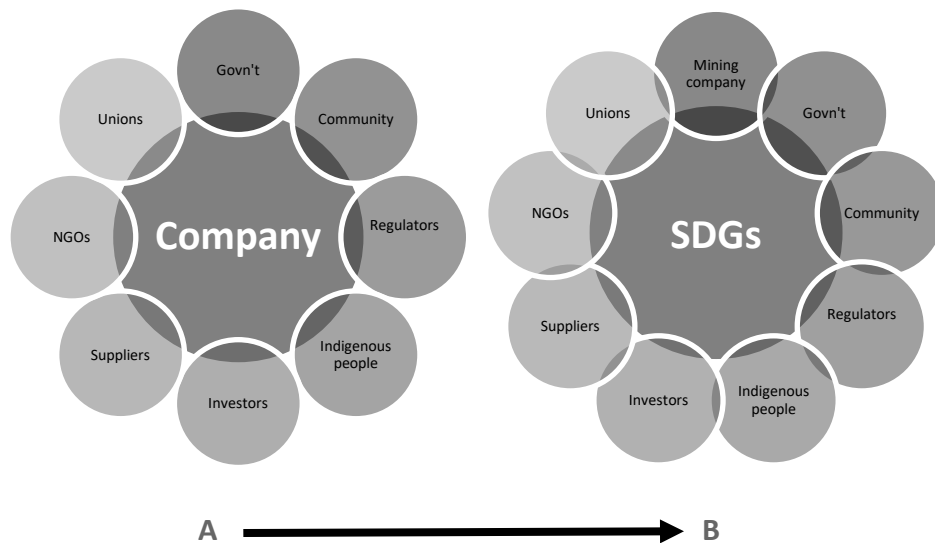


Figure 4.2 –Conceptual external stakeholder engagement and decision-making approach moving from a traditional organizational centered approach (A) to an issue centered approach using the SDGs as a convening force(B).

To illustrate how mining companies can work within the SDG framework and deliver positive outcomes, six examples of successful projects will be briefly examined. Each project was initiated before the launch of the 2030 goals but is described here to establish that past practice can build a foundation for future action. The projects profiled are also examples of mining-community initiatives that were enacted without the conflict that marred the examples discussed in Chapter Three.

4.3.1 SDG #3: Good health and well being

As noted previously, the fundamental underpinnings of creating shared value are not new. An early example from the mining sector comes from De Beers, a company that embraced the strategy in 2001. De Beers was born in the diamond fields of southern Africa more than a century ago and, by 2000, was the largest diamond-mining company in the world. Most of the company's mines are still in southern Africa where one of the critical social issues in the early 21st century was HIV/AIDS. (In 2000, the broader region of sub-Saharan Africa was home to approximately 10 per cent of the world's population and roughly 64 per cent of all people living with HIV).

In 2001, employees at Debswana, the joint venture between DeBeers and the Government of Botswana, participated in a voluntary HIV/AIDS study. The findings showed 35 per cent of Debswana employees tested positive for HIV (De Beers, 2005). De Beers knew that in a country where the stigma associated with AIDS carried the risk of ostracism and sometimes-violent reprisals, the actual infection rate could be much higher. De Beers estimated the direct employee costs, such as absenteeism, lost productivity, medical costs, training, and replacement costs, plus the costs of HIV/AIDS management interventions, including treatment, would equal one to two per cent of gross payroll over a 14-year period (De Beers, 2005). The cost to the company for each HIV positive employee was calculated to be between US\$1200 – 3500/year over 10-14 years. The cost of treatment was estimated to average US\$1500/person/year. This calculation illustrated the cost of inaction would far exceed the cost of treatment and led to a decision to provide HIV/AIDS drugs to employees and their spouses. The program originated in Botswana and was extended to the other countries in

southern Africa where De Beers has operations. The company aligned the HIV/AIDS programming with the De Beers social investment to identify additional opportunities that could extend the impact of the disease management program.

In a case study De Beers produced describing the program, the company is frank about its motives for funding the AIDs awareness program and anti-viral drugs.

“De Beers has a large number of employees in sub-Saharan Africa and business interests in many countries threatened by the next wave of HIV infection. Thus, our strategic approach to HIV/AIDs is borne not only out of care and concern for our employees and the communities in which we operate, but also out of sound commercial consideration.” (p. 3)

For De Beers, there was a clear point of intersection between the needs of society and the needs of the company. Collaboration with health care providers, NGOs, and community organizations was a key in the innovative program undertaken to address a critical social and commercial interest.

A more recent example of shared value is found in Ghana where the juxtaposition of another lethal disease and the presence of mining resulted in a program to combat malaria. AngloGold Ashanti initiated a malaria control program in southwest Ghana in 2005, when malaria infected approximately a third of its workforce. At that time, the company estimated it was losing 7500 workdays a month and spending \$660,000 a year on treatment, and the local hospital was handling 6800 malaria cases a month, of which 2500 were mine employees (Jack, 2014). The company’s objective when it began work on an integrated control program was to reduce worker absentee rates by 50 per cent over two years. Two years later, infection rates had decreased 72 per cent. Nine years later, the hospital treated fewer than 100 cases of malaria a month (Jack, 2014). Treatment costs also declined, resulting in annual cost savings to

the company of around \$600,000 (Shared Value Initiative, 2014, p. 29). Once again there is a clear benefit to the company (reduced absenteeism and health insurance claims plus treatment cost savings) and to society (improved health).

Mining companies often shy away from becoming engaged in social problems, worried that they lack the expertise to address these issues and concerned about the ability to manage expectations that may arise from their perceived “ownership” of the problem. HIV/AIDS and malaria are clearly not solely mining issues; some might say disease management is a government responsibility. Yet the cost of doing nothing in the two incidents described above was substantial. Both society and companies benefit from fewer instances of these diseases.

4.3.2 SDG #6: Clean Water and Sanitation

Another early example of CSV comes from South Africa, where Anglo American Thermal Coal transformed an operational problem to create value for both the company and its stakeholders. The company’s challenge was that it had a safety and environmental issue associated with increasing volumes of underground water in five mines. The facilities are in proximity to the community of eMalahleni (formerly Witbank), where there was a shortage of drinking water. In 2005, following a period of stakeholder engagement, Anglo American developed a water reclamation plant to treat mine wastewater to produce potable water. The local municipality buys a portion of this purified water, to supply 80,000 residents, reducing the number of people without access to clean water to two per cent from 14 per cent (Toledano & Roorda, 2014, p. 20). Sixty per cent of the costs of operating the plant are offset by collecting fees from the municipality and from BHP Billiton, which pays Anglo American to treat water from its nearby decommissioned colliery. In addition, a small business has been created to use gypsum, a by-

product of the water treatment, to produce and sell a building material now widely used in local construction (Anglo American, N.D.), and other new, local businesses, such as the White Water Beverage Company, also use water from the plant. This innovative approach to working with the community to address a business problem that intersects a social issue is the only mining initiative to date to be endorsed by the United Nations Framework Convention on Climate Change (UNFCCC). Climate action is SDG#13.

4.3.3 SDG #9: Industry, Innovation, and Infrastructure

Another opportunity for gold miners to advance the SDGs is found at the intersection of SDGs #3 Good Health and Well Being and #9 Industry, Innovation, and Infrastructure. Modern diagnostic tests to detect malaria now attach the disease antibody to gold nanoparticles during manufacturing. When the malaria test is administered, the nanoparticle attracts any malaria antigens in a blood sample, delivering a positive readout on the diagnostic device (Jack, 2014). This innovation makes gold an essential element in a rapid diagnosis of those infected with malaria. Other applications for gold are now being found for diagnostics of other illness, such as dysentery.

4.3.4 SDG #11: Sustainable Cities and Communities

When Rio Tinto began planning for a new coal mine, Clermont, to replace the Blair Athol Mine, due to close in 2015, the community wanted the company to build infrastructure. But Rio Tinto resisted the traditional philanthropic approach, offering instead to sponsor a strategic framework to guide development in the rural town of Clermont (population 3160), located in the Bowen Basin of Queensland in Australia. The resulting community plan focused on facilitating the transition to a sustainable post-mining future for Clermont. Rio Tinto worked

with the community to support efforts to explore needs and challenges, and to guide development. The company paid for the plan, which was led by the regional council and facilitated by the Institute for Sustainable Regional Development at Central Queensland University (Miles, Reark, Kinnear, Hawkins, & Springer, 2008) The approach to collaborative sustainability planning was a runner up in the 2011 Australia National Economic Development Awards. The approach would appear to be adaptable to other communities and mining projects, and could be used to advance SDG progress.

4.3.5 SDG #15: Life on the Land

Another Rio Tinto initiative – the Hamersley agricultural project in Australia – illustrates the linkage between two SDGs: Life on Land (SDG #15) and Responsible Consumption and Production (SDG#12). In this example, the mining company uses surplus water from underground operations to irrigate 830 hectares in Pilbara. This region is arid for most of the year, but only on the surface. At the Marandoo Mine, dewatering is required to create dry conditions for iron ore mining below the water table. By using this underground water to irrigate surface land, the company has capitalized on an agricultural opportunity. Much of the irrigated land is used to grow Rhodes grass for hay production. This crop could drought-proof Rio's six pastoral stations, home of 25,000 head of cattle, with future potential to create an export hay industry (Stockwell, 2013). The potential to diversify to other crops may create additional opportunities.

4.3.6 SDG #16: Peace, Justice, and Strong Institutions

On March 2, 2017, the Mining Association of Canada announced a membership commitment to implement the Voluntary Principles on Security and Human Rights (VPs). Introduced in 2000,

the VPs are a multi-stakeholder initiative on the part of the extractive industry, government, and NGOs to respect human rights. The VPs provide guidelines for companies using private or public security forces to protect operations and represent one of six standards under Canada's CSR Strategy for the Extractive Sector (Mining Association of Canada, 2017).

4.4 Conclusions

This chapter sought to answer two questions. The first was, why does mining have such low public trust levels? Factors driving low trust discussed include widespread reporting of mining-community conflict, within the study period this included environmental disasters such as the Mount Polley and Samarco tailings dam collapses, resettlement, corruption, and corporate malfeasance. Not only do these stories appear in the media, but they are shared widely via social networks. With increasing numbers of people connected to the internet, news travels quickly and reaches a much broader audience than just immediately impacted communities. Trust can also be eroded when there are changes to the social chain of custody within the life cycle of a mining project. And low trust levels can be further compromised when the views of company and community diverge. Stakeholders typically view CSO and NGO representatives as more credible than company spokesperson. A related issue arises when there is the perception that there is an inconsistency in approach between head office and local operations of multinational companies. This can impact even companies with strongly stated core values as institutional policies are not always sufficient to align corporate behaviour.

With academics and applied researchers both lamenting low public trust levels in business and industry, the second question examined was how can mining companies rebuild trust? There are some basic steps. Companies need to know their stakeholders and listen to

their concerns. To be effective, companies need to break down organizational silos that can slow decision making and impede stakeholder identification and engagement. Companies also need to act transparently, commit to communications, and share failures and challenges as well as successes. While this may help to build incremental trust, it is suggested that aligning business with the values of society will be the most effective way to re-establish trust. A clear path for trust building is found in the UN 2030 Sustainable Development Goals. The 17 SDGs provide sustainability goals endorsed by business, industry, government, CSO, NGOs, communities, and development agencies. This common agenda is ambitious and cannot be achieved without collaborative partnerships. For mining companies wishing to embrace the SDGs, “creating shared value” offers a methodology to find, and report upon, profitable business strategies that deliver positive social outcomes.

The examples discussed in this chapter were selected to demonstrate how mining can contribute to the sustainable development agenda. With 17 SDGs to choose from, mining companies will need to assess which of the SDGs has materiality for the organization. Some companies may find multiple opportunities, or projects which affect more than one SDG. Others may choose to embrace all 17 SDGs and seek ways to embed them to business strategy. The next chapter will take a closer look at mining in Peru, where company-community conflict has become a major impediment to foreign investment and to building, commissioning and operating mines. A qualitative case study is used to investigate a business decision with sustainability at its core and that has parallel goals - the development of a profitable business strategy that creates value by delivering tangible social benefits. The case investigates the approach undertaken by Sociedad Minera Cerro Verde (Cerro Verde) as the company

developed plans to triple production at its copper mine in the Arequipa region, where Tía María is located. The case explores the rationale and measures of success for a business decision where avoiding social risk was a key consideration in project planning. To continue examining the role mining can play in advancing progress on the 2030 Sustainable Development Goals, the case is framed, retrospectively, around SDG#6 access to clean water and sanitation.

Chapter 5: Shared Purpose: Mining, Water, and Sanitation in Arequipa, Peru

5.1 Introduction

The idea of finding points of intersection between the needs of business and the needs of society then building partnerships that benefit both is intriguing. It appears to offer an opportunity to collaborate, reduce conflict, accelerate progress on the SDGs, and demonstrate the business case for a more strategic approach to CSR. The examples in Chapter Four introduce the idea of “creating shared value,” or approaching common issues with a sense of shared purpose. In this chapter, one specific project is explored in depth. The Cerro Verde case was selected for two principal reasons. On the surface, it appeared to be an innovative example of a company making a business decision with sustainability at its core. Of equal interest was the fact that the company could triple production at a very large mine, in an area where mining-community conflict is common, without generating the types of protests experienced at other mining sites. Of note, both Cerro Verde and Tía María filed environmental impact assessments in 2011. As discussed in Chapter Three, Tía María remains stalled due to social opposition to the mine, yet Cerro Verde successfully expanded its operations and commissioned the project on schedule in May 2015. What did Cerro Verde do differently to prevent the type of conflict that derailed the Tía María project and made Peru the country with the largest number of mining-community conflicts in the research period?

This chapter starts by setting the context for the case and framing it within the SDGs. The methodology is then explained, and analysis of the findings of the desktop review, in-person interviews, and field visits to the region is provided. Next, a perspective on the challenges, lessons learned, and attributes of success is offered. There are several important

topics that are not addressed in depth in this case, including water governance and the technical aspects of wastewater treatment. While these areas are introduced or summarized, a detailed investigation into either is beyond the scope of this research which seeks to answer the following questions:

- What approach did Cerro Verde use to secure social permission in a country with highly mobilized opposition to mining?
- Can measurable business value be generated through clear identification of social problems that intersect with industry needs?
- If CSR is positioned as a strategic function, will that stimulate new opportunities for companies, civil society organizations, and governments to collaborate to address issues of mutual interest and reduce mining-community conflict?

5.2 Case Frame: The SDGs

Concern about competition between mining and communities for a scarce resource – in this case, water – creates an opportunity for mining companies to advance one of the new SDGs launched by United Nations members in September 2015 and introduced in Chapter Four. As noted previously, the SDGs set an agenda for equitable, socially inclusive, and environmentally sustainable economic development. The goals have been endorsed by governments, civil society and non-governmental organizations, development agencies, and business. Mining, which has contributed to many of the problems the 17 SDGs seek to address, is also uniquely positioned to contribute to the transition to a sustainable world (World Economic Forum, 2014). This is attributable to the convening power of mining companies and their planning and technical expertise, as well as their access to capital and technology.

The SDGs provide a context for discussing issues of common interest, and facilitating multi-stakeholder collaboration for solving issues related to specific goals. As the case study explored in this chapter illustrates, there are considerable benefits to be achieved when companies and communities address water supply within the framework of SDG#6 - access to clean water and sanitation. Sub-categories of SDG#6 of specific relevance to mining include 6.1 (safe and affordable drinking water), 6.2 (access to adequate and equitable sanitation and hygiene), 6.4 (increased co-operation and capacity building for wastewater treatment), and 6.5 (strengthen local community partnerships in water and sanitation management). To illustrate the opportunities available to mining companies wishing to work on the SDGs, the Cerro Verde Mine expansion project is examined. Although undertaken before the official announcement of the 2030 SDGs, the case illustrates the contribution mining companies could make by addressing sustainable issues that are at the point of intersection between business interests and community needs.

5.3 Case Context: Peru

In 2015, Peru was the third largest global producer of copper, silver, and zinc, the fifth largest gold producer, and had the second largest known copper reserves in the world. Mining in this resource-rich nation is a vital component of Peru's economy. In 2013, the industry contributed US\$2 billion to the Peruvian government via tax and royalties (Brereton, Arts, & Sturman, 2016). In 2014, mining accounted for 14 per cent of the country's gross domestic product (GDP), and mineral export revenues were US\$16 billion, or 50.3 per cent of the country's total exports, providing direct employment for close to 200,000 people (EY, 2015, p. 24).

Despite its financial contribution, there is little public trust in mining and Peru has been one of many countries around the world where mining-community conflict has increased in recent years. As discovered in Chapter Three, Peru was the country with the largest number of serious conflicts during the 2012-2015 study undertaken for this research, and as the chart in Figure 5.1 illustrates, there were numerous other disagreements. The Peruvian Institute of Economics reports the country lost \$14.9 billion between 2010 – 2014 in mining export revenue (2007 prices) from projects that did not happen due to social unrest (qtd. in Jamasmie, 2015). In 2014, it was predicted that opposition to mining projects in Peru would cost the country \$57 billion in foreign investment, with news reports suggesting over \$21 billion worth of mining projects are delayed in Peru due to social conflict (Jamasmie, 2015).

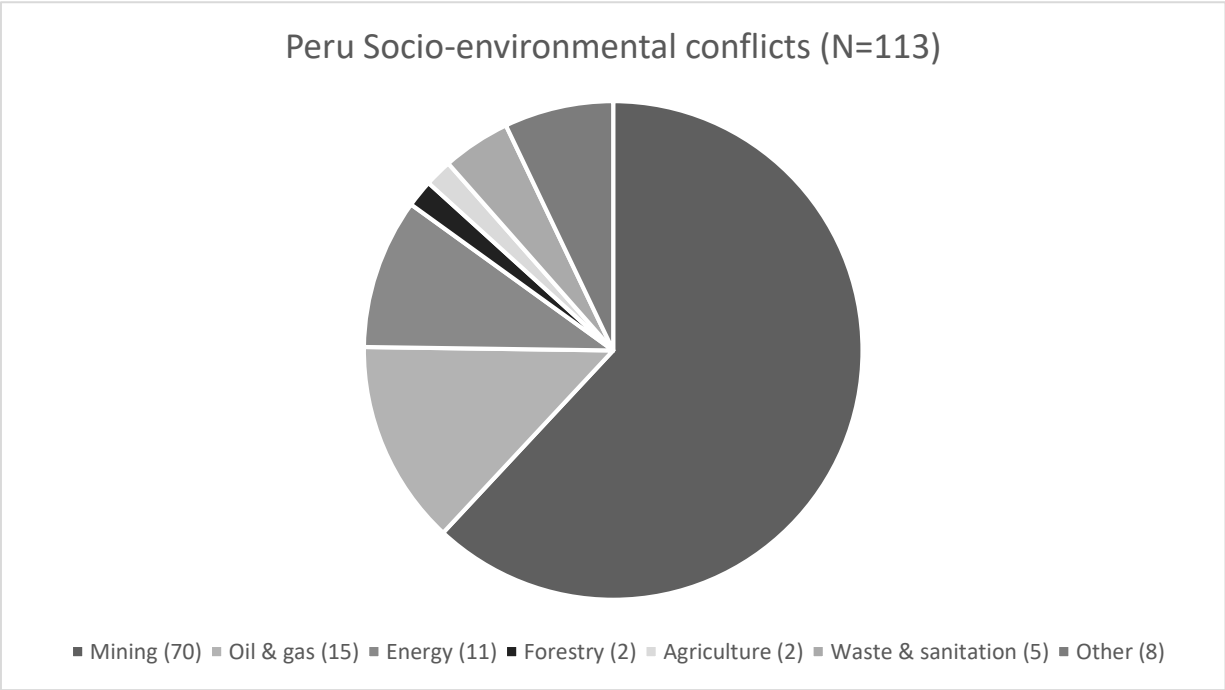


Figure 5.1 - Source: Defensoría del Pueblo – SIMCO; REPORTE DE CONFLICTOS SOCIALES N. 143 Enero 2016 p. 23

5.4 Water

As discussed in Chapter Three, the causes of mining company-community tension are complex, however, water quality and water quantity represent one of the fastest growing economic and social challenges to mining (IFC, 2014, p. 3). One issue of ongoing concern is that many of the mineral-rich areas of Peru are characterized by water scarcity due to arid conditions, or situations where surface water is abundant but only at certain times of the year in certain regions, and by the presence of existing water users including farmers, hydro-electric power, mining, other industrial users, and communities. Water is a frequent trigger of protests in Peru (PGI Intelligence, 2016). This makes water a resource that galvanizes community concern due, in part, to the conflicting perspectives. Communities and government tend to view water as a fundamental right required for life, while industrial users view it as an economic asset or commodity.

The discourse on water is frequently a dichotomy between communities and companies. The issue can become political and negatively focussed. (Interview 15)

Competition for this scarce resource is another trigger of conflict between mining and communities, especially as companies need considerable water for operations (mineral separation and processing, transporting ore and waste, tailings management, dust suppression, washing equipment, human consumption, etc.). Global Water Intelligence (GWI), a UK group providing analysis of international water use and issues, reports that mining companies spent \$12 billion globally on water infrastructure in 2013, a 275 per cent increase over 2009. In comparison, mining production costs increased 52 per cent during the same period (Kosich,

2014). With two thirds of the world's biggest mines in countries with water risk, and with complex geology making wastewater treatment more complicated, demand for water is increasing at a time when water scarcity is a leading environmental issue (Globescan, 2014), and when the UN has estimated that to meet global needs the world will need 30 per cent more clean water by 2030.

As noted previously, mining projects have been stopped because of water quality and supply issues, and a variety of legislation to protect water and reduce conflict is under review in countries around the world. In January 2014, Chilean lawmakers introduced a bill that would force mining companies using more than 150 litres of water per second to incorporate desalinated seawater from the Pacific Ocean to meet their water needs and secure environmental approvals. In British Columbia, an area of water abundance, the provincial government introduced a water sustainability act in 2016. This regulation allocates water rights that will, for the first time, impose fees for the use of groundwater and allow government to restrict water use in times of scarcity. According to the Intergovernmental Panel on Climate Change, by 2025, 60 per cent of the world's population will be living in countries classified as "water stressed" and Peru is considered one of the countries most vulnerable to impacts of climate change (Bebbington & Williams, 2008). The result of these factors is that

. . . more and more companies are embracing "corporate water stewardship" practices that expand traditional notions of water management to include their water-related impacts within communities and the river basins and ecosystems in which they operate. Corporate water stewardship also includes the notion of contributing to improved public water governance via responsible business engagement in water policy and collective action. In short, enlightened business leaders recognize that healthy societies and healthy markets go hand-in-hand, and, further, that achieving water and sanitation security will require

the collaboration of the public sector, civil society, and the business community. (UN Global Compact, 2014)

5.4.1 Peruvian Water Governance Overview

In 2004, a new legal and institutional framework for water governance in Peru was proposed. Passed in 2009, the Water Resources Act promotes integrated water resources management. The new act replaced the 1969 General Water Law, which saw water management responsibilities divided among different federal government ministries including agriculture, housing, health, and energy and mines. Under the 1969 law, the work of state departments was complemented by user-based water organizations that governed water locally, as well as irrigation committees and highland community water systems. The principal focus of all groups was water for agriculture. Events in the late 1990s and early 2000s, including the growth of export-oriented agriculture, mining, hydroelectric power production together with increasing demands for the provision of urban drinking water, created impetus for changes in water governance. The 2009 law established a state water institution, Autoridad Nacional del Agua (ANA). The Autoridad Administrativa del Agua (AAA) represents ANA in 14 regions of Peru, and is supported by a local water authority, Autoridad Local del Agua (ALA), in each major river basin. This new framework shifted water governance from a centralized approach to an integrated framework based on watershed management and established river basin councils (See Budds & Hinojosa, 2012 for an overview of water governance in Peru.)

5.4.2 Water in Arequipa

The City of Arequipa is Peru's second largest metropolitan area, with a population of close to one million: 900,000 in the 2009 census with significant in-migration since then. In 2005, 19.5 per cent of the metropolitan Arequipa population had no access to the water network, and 33.1

per cent per cent were not connected to the sewerage network. By 2011, Arequipa City experienced a potable water deficit of almost 333 liters per second (Chance2Sustain, 2013, p. 45). Water for the region comes from the Chili River, and from a set of dams in the Andean highlands collecting seasonal precipitation for distribution during the dry season. In 2013, the existing wastewater infrastructure operated by Servicio de Agua Potable y Alcantarillado de Arequipa (SEDAPAR) consisted of the Chilpina treatment plant built in 1969. The plant's capacity of 100 litres/second meant most municipal sewage was untreated when discharged to the Chili River – the principal water source for the region (Chance2Sustain, 2013, p. 45)

5.5 Cerro Verde and the Circle of Water

The Cerro Verde copper mine is in a desert environment approximately 30 km southwest of Arequipa City in the Arequipa province of Arequipa region (departemento), where rainfall averages 1.5 inches/3.7 cm per year. The area has been mined since the 1880s when the Spanish shipped high grade copper oxide to Wales. From 1916 – 1970, when the mine was nationalized, the property was owned by an American company, Anaconda Copper. In 1993, the mine was once again privatized and acquired by Cyprus Amax, which expanded the property in 1996. Another American company, Dodge Phelps, acquired Cerro Verde in 1999, and in 2004, approved a US\$850 million project to install a new 119,000 tonnes per day (tpd) concentrator. Before that project was commissioned, the mine changed owners once more with Freeport-McMoRan (FCX) acquiring a 53.6 per cent interest in Cerro Verde in 2007.

Headquartered in Phoenix, Arizona, FCX has mining operations in Indonesia, North America, the Democratic Republic of Congo, and South America. The company's 2015 Sustainability Report indicates there is a "Sustainable Development Leadership Team",

sponsored by an executive vice president and chief accountability officer, and led by a vice president of environment services and sustainable development. The committee includes business unit presidents and senior personnel from safety, supply chain, human resources, sales, compliance, and land and water. In addition, FCX has a water policy that sets out goals and guidelines for action (Freeport-McMoRan, 2015, p. 28) and all major operations in arid regions maintain a water balance model (Ibid, p.30). The company is a member of the Extractive Industries Transparency Initiative (EITI), and has been providing water disclosure information to the CDP since 2010. In response to question W2.2 in its CDP's 2015 water report, FCX wrote:

“Water is integrated into a comprehensive, company-wide risk assessment process incorporating both direct operations and our value chain (upstream supplier and downstream consumer influences). The company relies on its Sustainable Development (SD) Risk Register process to assess risks in our value chain, including water issues as applicable. Freeport-McMoRan takes both a current and long-term view on securing water supplies that address changing water use patterns and changing risks and opportunities for future sources of water.”

5.5.1 The Cerro Verde Mine

With estimated reserves of 4.63 billion tonnes of copper, Cerro Verde is one of the largest copper reserves in Peru. The porphyry copper deposit has oxide, primary, and secondary sulfide mineralization and is mined from two open pits. The mining concession stretches over approximately 157,000 acres, including 14,500 acres rented from the Regional Government of Arequipa, plus 71 acres of owned property, and 80 acres of rights-of-way outside the mining concession area (Freeport-McMoRan, 2016, p. 15). In 2016, Cerro Verde's production totalled 1.1 billion pounds of copper (Cu) and 21 million pounds of molybdenum (Mo), an increase from 2015's 545 million pounds Cu and 7 million pounds Mo (Freeport-McMoRan, 2016). Mineral

grades are estimated at 0.38 per cent Cu and 0.015 per cent Mo (Freeport-McMoRan, 2015). The 2012 – 2015 US\$4.6 billion expansion project, the focus of this case study, enabled the mine to triple throughput from 120,000 tpd to 360,000 tpd and, beginning in 2016, provided incremental annual production of approximately 600 million pounds of copper and 15 million pounds of molybdenum. Today, Cerro Verde's production places the mine in the top five copper producers in the world. As a result, the mine makes a significant financial contribution to the country and the region. In 2014, before the expansion, Cerro Verde's operations and investments generated a total impact of \$4.13 billion, equal to two per cent of Peru's GDP with approximately 40 per cent of the municipality of Arequipa's tax income coming from canon minero money (Filippi, Hordijk, Alegría, & Rojas, 2014, p. 542).

Canon minero: Law No. 27506 signed in 2001 established that 50 per cent of the corporate income tax paid by mining companies would be allocated to a fund called the canon minero. The law also set out the rules for sub-national revenue transfer stipulating that the national government would transfer 25 per cent of the canon minero to the regional government that hosts the mining operations. Derivation is the primary criteria used. Initially, canon minero funds could only be used to finance public investment that would benefit the community and support sustainable development projects in the region where mineral extraction occurs. The terms of canon minero were modified in 2003, under Law No 28077, to allow the use of canon minero funds for infrastructure (Aresti, 2016).

Today, the Cerro Verde mine has more than 3,000 direct employees and an average of 3,500 contractors supporting the operations (Freeport-McMoRan, 2015). At the peak of the expansion construction, more than 21,500 contracted employees worked on the project, with approximately 50 per cent of construction workforce coming from the local region (Freeport-McMoRan, 2015).

Mine	Cerro Verde
Location	2750 metres above sea level, Atacama Desert 30 kilometres southwest of Arequipa City, Peru
Ownership	<ul style="list-style-type: none"> • 53.56% Freeport-McMoRan • 21% SMM Cerro Verde Netherlands B.V. (a subsidiary of Sumitomo Metal Mining Company Ltd.) • 19.57% Compañía de Minas Buenaventura S.A.A. • 5.86% Other shares publicly traded Lima Stock Exchange
Commodity	Copper and molybdenum
Mine type	Open pit
Concession	<ul style="list-style-type: none"> • 63,538 ha • Second biggest copper mine in Peru based on contained reserves of 25 billion pounds copper
Employees	3023 (2016)
Water use at Cerro Verde	<ul style="list-style-type: none"> • FCX has a company-wide water policy setting out goals and guidelines for action; operations in arid regions maintain a water balance model • Water for mining operations comes from renewable resources – series of storage reservoirs within Chili River watershed collect water from seasonal precipitation • The mine is a zero-discharge facility • Environmental management system certified to ISO 14001, annual independent audit
Water efficiency/conservation	<ul style="list-style-type: none"> • Water balance model • Recycle water from concentrate processing plants and reclaimed water captured at tailings storage facilities and leach pad

Table 5.1 - Cerro Verde Facts

About the same time that Southern Copper began planning for Tía María, expansion plans for Cerro Verde were being developed. The two properties are located approximately 200 kilometres apart in the same region of Peru. Both are large-scale copper mines, both operate in areas of water scarcity where agriculture is the predominant industry, and both have a long history of operations in the region: although Tía María is a greenfield project, Southern Copper has been working in the area since its Toquepala Mine began operations in the 1960s. (It is relevant here to recall that the analysis of mining-community conflict reported upon in Chapter Three suggests both new and existing operations are susceptible to conflict: in 2015 of

the 55 conflicts recorded, 29 were at “brownfield” operations versus 26 at “greenfield” projects.)

	Cerro Verde	Tía María
Project description	Expansion brownfield mine	Develop greenfield mine
Commodity	Copper	Copper
Estimated Reserves	4.63 billion tonnes of ore graded 0.38% copper	6.41 billion tonnes of ore graded 0.39% copper.
Location	SW Peru	SW Peru
Region/Departemento	Arequipa	Arequipa
Province	Arequipa	Islay
Principal water user	Agriculture	Agriculture
Ownership	Freeport-McMoRan <ul style="list-style-type: none"> • US • Publicly traded: New York exchange 	Southern Copper <ul style="list-style-type: none"> • US • Publicly traded: New York & Lima exchange
Parent company ICMC Member	Yes – founding member	No
Member Multi-Sectoral Water Users Committee	Yes – since 1983	No
Operations in region (start year)	Cerro Verde 1976 <ul style="list-style-type: none"> • Acquired by FCX 2007 	Toquepala Mine (1960) Ilo Processing Facility (1975) Cuajone Mine (1976)
Project EIA filed	2011	2011
EIA approved	2012	2014
Construction permit	Granted 2012	Pending
Construction	2013	Not started
Commissioning	May 2015	Target 2017 will not be met
Social opposition	No days lost to social opposition	<ul style="list-style-type: none"> • 8 killed in protests 2007 – 2015 • 300 hospitalized in 2015 • State of emergency declared by federal government 2011 & 2015

Table 5.2 -Comparative analysis of the Tía María and Cerro Verde projects. Of note, the Tía María example was investigated solely through media analysis and desktop review. No interviews were conducted with representatives of Southern Copper or project stakeholders other than regulatory authorities. Of note, many of those who participated in the Cerro Verde interviews raised Tía María to contrast the two projects.

Despite the similarities between Cerro Verde and Tía María, the two projects had very different outcomes. While Tía María remains mired in controversy at the time of writing²⁹,

²⁹ Early 2017.

Cerro Verde's expansion project was commissioned on schedule with no days lost to public opposition. This case explores the approach taken to secure social consent, and illustrates the role mining can play in advancing sustainable development.

5.5.2 Cerro Verde Case Methodology

The case study objective is to generate a theoretical understanding of the determinants of success when planning a mining project in an area where mining-community conflict is a common occurrence. The aim of the inductive approach is to understand the conditions that motivated Cerro Verde to take alternative courses of action from those employed by Southern Copper at Tía María. The intent with this theory-building case is to demonstrate the return on investment companies can achieve when they undertake strategic CSR that places sustainable development at the core of business decisions. Key research questions explored in the case:

- What approach did Cerro Verde use to secure social permission in a country with highly mobilized opposition to mining?
- Can measurable business value be generated through clear identification of social problems that intersect with industry needs?
- If CSR is re-positioned as a strategic function, will that stimulate new opportunities for companies, civil society organizations, and governments to collaborate to address issues of mutual interest and reduce mining-community conflict?

5.5.3 Data Collection

Before beginning the research, constructed codes (Strauss & Corbin, 1998), also known as organizational categories (Maxwell, 2012, pp 111-112) were established. These codes were based on CSR literature, the results of the media analysis, personal practitioner experience,

recent developments in the mining sector, and examples of company-community shared infrastructure. Codes included: trust, stakeholder engagement/consultation, water, beneficiation (philanthropy, community investment), and social risk. The categories were used to sort data collected during a document review of secondary sources and archived materials including:

- Company sustainability reports, 10K filings, CDP submissions,
- Scholarly articles,
- Reports and publications of the World Economic Forum, ICMM, Shared Value Initiative, International Finance Corporation, UN Global Compact, World Business Council for Sustainable Development, and other third parties,
- Media coverage.

Once the project specific literature review was complete, in-person semi-structured interviews, using a questionnaire to frame and guide discussion, were undertaken. The qualitative interviews (N=17) were conducted with a purposeful sample of candidates including company representatives (senior management and front-line employees); representatives of the engineering procurement and construction management (EPCM) firm, regulatory authorities; government personnel; and social groups. Interviews were conducted in-person in Arequipa, Lima, or Vancouver, and lasted between 60-90 minutes. When no additional information emerged, it was assumed that saturation had been achieved. Notes were taken and most interviews were recorded. All candidates were told of the intent of the research and advised that any questions asked could be left unanswered and that the interview could be terminated at any point. Each interviewee was also asked if he/she would be willing to conduct

a follow-up session if additional questions were identified during subsequent interviews. All candidates were generous with their time and expertise.

Field research in Arequipa in May and October 2016 allowed for visits to the potable water facility; the wastewater treatment facility; and water treatment facilities, farming operations, and water conservation projects in the agricultural district of La Joya. This field work provided valuable observational data.

NVivo software was used to classify comments from the interview transcripts to nodes that mirrored the desktop research categories: trust, stakeholder engagement/consultation, water, beneficitation (philanthropy, community investment), and social risk. Additional nodes were created to segment data on farmers, agreements, canon minero, measures of success, and lessons learned. The interview grouping and guide is included in Appendix B.

Triangulation of observation, interviews, and the document review was used to provide a more accurate account than any of the methods could provide alone (Maxwell, 2012, p. 107). Although the sample size was small, it has been noted that small samples can render accurate information if participants possess a high degree of competence for the domain of inquiry (Guest, Bunce, & Johnson, 2006, p. 74). In addition, findings of small sample qualitative studies, such as this, may be of use in informing future discussions (Marshall & Rossman, 2014, p. 84) of CSR, shared infrastructure, and advancing progress on the SDGs within the mining sector. It is hoped that the analysis contributes to a best practice theory for aligning corporate and community interests, identifying impacts, and describing the process required to manage social responsibility as a core management function.

5.5.4 Expansion Planning

Between 2006-2008, when personnel at Cerro Verde began detailed planning for a mine expansion – to increase production from 120,000 metric tonnes per day to 360,000 metric tonnes per day – a key consideration was how to access the volume of water that would be required for processing the additional ore. As the mine operates in an area of water scarcity, and where access to clean water is one of the region’s most important needs, securing access to water for mining operations was recognized as both a fundamental operations requirement and potential project risk. Concerns about the allocation of scarce water resources had triggered massive conflict for other mining projects in Peru, including Conga, Las Bambas, and the nearby Tía María project. It was recognized that to reduce risk of the type of conflict that had disrupted or stalled other mining projects in the country, it would be critical to engage stakeholders and avoid placing the mine in competition with farmers for clean water.

Cerro Verde has a history of working with stakeholders to address water issues in Arequipa. The company has been a member of the multi-sectoral water users’ committee since 1983. In 2004, Cerro Verde agreed to finance construction of the Bamputañe dam (US\$13.1 million) in exchange for preferential energy tariffs, as well as co-financing 40 per cent of the US\$12.4 million Pillones dam, built in 2007, in exchange for 60 per cent of the water (Filippi, Hordijk, Alegría, & Rojas, 2014). These dams, located in the Andean mountains above Arequipa, increase the volume of water available for regional use. With the addition of these facilities, the regulated system was enhanced to store water that would otherwise flow to the ocean. This resulted in increased water rights for the local population, farmers, and Cerro Verde.

Despite a history of working well with local stakeholders, Cerro Verde was not immune to the types of conflict that had impacted other mining projects in Peru. In 2006, Cerro Verde experienced a period of social tension. In June, thousands of protestors marched to the mine demanding compensation for the impacts they believed would occur from the mine's new 119,000 tpd concentrator, and protesting the company's tax stability agreement³⁰ with the national government (Roca Servat, 2012, p.161). Discussions with representatives of the protest movement led Cerro Verde to conclude that working collaboratively to address water infrastructure could be a means to reduce future conflict and fulfil the company's social responsibility mandate. Analysis of the interview transcripts suggests the events of 2006 resulted in a shift in Cerro Verde's approach to community relations.

We looked at the protestors. There were men and women who were poor, illiterate, who had no services, no water. The mine was richer than the government. We realized we needed to change the argument, that the real issue wasn't money, it was water. (Interview 05)

We needed ideas to work with [the] whole Arequipa Province area. We did studies, surveys, meetings with authorities, local leaders etc. and recognized/understood that the first problem was [lack of] potable water. (Interview 10)

Cerro Verde understood that water was an important issue and that as a company they needed to do more than just pay taxes. They needed to be a part of the solution to the water issue. (Interview 11)

³⁰ In 1998, Cerro Verde signed an agreement with the national government exempting production from the mining concession from royalties. In 2013, a new 15-year stability agreement was signed under which Cerro Verde pays royalties on all production beginning in January 2014. (FCX, 2016 Form 10K, p. 171)

Before 2006 the company did not have a dedicated community relations department. According to a person familiar with the operation, discussions with community stakeholders were conducted in a manner like a labour union negotiation with the company holding a hardline position to protect its interests (Interview 05). The 2006 protests represented a turning point.

In August 2006, the company signed an agreement (known as the frame agreement) with regional officials, elected representatives, and social groups to support the provision of water infrastructure for Arequipa. The first major project undertaken was the construction of a potable water plant. At that time, many people in Arequipa did not have access to in-home, 24-hour a day potable water. In some instances, this was due to new/migrant settlements, such as the one in the North Cone area, where land acquisition is informal and based on occupancy. The city had not planned for development in these areas, which were therefore not included in the city's master sanitation plan (Roca Servat, 2012, p. 97). This meant that new residents had to rely on public taps with limited water supply.

The potable water plant, known as La Tomilla II, was built in the North Cone area of Arequipa City, and was financed through Cerro Verde's contribution to the Mining Program of Solidarity with the People (PMSP). The PMSP constituted an agreement between mining companies and the national government and was introduced in 2006 under Decree No 071-2006. Instead of paying income tax on profits, the mining company would allocate 3.75 per cent of their net income for five years to municipal and regional development. PMSP contributions were transferred to a special purpose fund, administered by the company. For companies to participate in the PMSP, the following conditions had to be met: companies had

to sign an agreement with the state; international prices had to be above a certain reference level; and companies had to be making profits (Aresti, 2016, p. 16).

In August 2006, there was a central agreement with Cerro Verde, central government, local authorities, SEDAPAR and others. We all agreed to work on sustainable water projects for the city of Arequipa. At that time, Cerro Verde acknowledged [it was] not going to pay royalties due to an exemption provided via a stability agreement³¹. Therefore, [Cerro Verde] agreed to fund potable water plant – La Tomilla II – to pay for engineering, basic studies of La Tomilla II, final engineering, build it, and then transfer it to SEDAPAR. (Interview 6)

Commissioned in 2012, La Tomilla II has a capacity of 1.5m³/second enabling it to provide potable water to 300,000 city residents. The plant's modular construction means it can be expanded as needed to provide 750,000 homes with 24-hour access to the potable water network. An added benefit of the new plant is its location above most of the North Cone settlements. This means gravity can be used to deliver the water, eliminating the need for pumping stations and delivering significant energy cost savings for SEDAPAR.

The other major project identified in the 2006 agreement was the construction of a municipal wastewater treatment plant (WWTP). At the time the agreement was signed, just eight per cent of Arequipa's municipal wastewater was being partially treated (Filippi, Hordijk, Alegría, & Rojas, 2014), with the remainder discharged directly to Chili River, the source of 95

³¹ "In December 2016, the Peruvian parliament passed tax legislation that, in part, modified the applicable tax rates established in its December 2014 tax legislation, which progressively decreased the corporate income tax rate from 30 per cent in 2014 to 26 per cent in 2019 and thereafter, and increased the dividend tax rate on distributions from 4.1 per cent in 2014 to 9.3 per cent in 2019 and thereafter. Under the December 2016 tax legislation, effective January 1, 2017, the corporate income tax rate is 29.5 per cent, and the dividend tax rate on distributions of earnings is 5 per cent. Cerro Verde's current mining stability agreement subjects FCX to a stable income tax rate of 32 per cent through the expiration of the agreement on December 31, 2028. The tax rate on dividend distributions is not stabilized by the agreement." (FCX, 2016 Form 10K, p.164)

per cent of the area’s water needs. In five spots along the Chili River, the level of fecal coliform exceeded World Health Organization standards set to provide safe levels for agricultural irrigation and water consumption by livestock (Table 5.4). Yet, after these discharge spots, more than 26,000 hectares of agricultural land is irrigated at the medium and lower Chili River basin.

Measure	Average before discharge MPN g/TS	Average after discharge MPN g/TS	US EPA Class 3 limits MPN g/TS
Fecal coliform/100 ml	1441	4,780,915	1000
Total coliform/100 ml	6320	76,490,320	5000

Table 5.3: Data provided by Cerro Verde and SEDAPAR showing fecal coliform counts in the Chili River in 2011. MPN g/TS: most probable number of grams per total solids

Under the terms of the original WWTP agreement, 32³² mayors from municipalities within the Arequipa region agreed to work together to secure a site for the plant and to finance its construction using canon minero funds. Cerro Verde would pay for the technical engineering studies necessary for the WWTP. SEDAPAR would operate and maintain the new plant with the objective of treating all wastewater from the city of Arequipa.

5.5.5 Building a Business Case with Sustainability at the Core

As detailed planning got underway for the expansion that would increase Cerro Verde’s production to 320,000 tpd, the project team conducted a risk assessment. They understood that attempting to triple production while operating in an area of water scarcity had the potential to create social conflict. They also recognized that social conflict could impose risk to

³² District numbers change from time to time with 29 recorded in December 2016. The number referenced here aligns with the number of mayors referenced by interviewees for the period the research covers.

the project schedule and budget, impede existing operations, create legal challenges, and damage reputational capital. The potential for social conflict was factored into the project team's assessment of traditional water supply options - increasing fresh water withdrawals, accessing ground water, and building a desalination plant - using a sustainable development risk matrix. A local multi-disciplinary leadership team populated the matrix to plot options against probability and impact of risk, and rate the consequences from high to low in categories that included community, safety, environment, and production (Freeport-McMoRan, 2015, p. 9). Montgomery Watson, a global engineering company specializing in sustainability, was retained to evaluate the water basin and determine the feasibility of building a new dam to collect additional freshwater. The outcome of the assessment concluded that a new dam would be too expensive given that it would only be available intermittently and that the water supply would be susceptible to drought. With the mine requiring a constant flow of water for operations, another dam did not seem a feasible solution.

Desalination is not common in Peru but FCX was considering taking water from the Pacific Ocean for its mines in Chile (Freeport-McMoran, 2011). Desalination is becoming increasingly affordable and may have a lower capital costs than other infrastructure options³³. However, desalination typically has higher electricity and distribution costs. Cerro Verde is located relatively close to the Pacific Ocean (approximately 120 km) but the mine is 2500 m above sea level, meaning a considerable amount of electricity would be required to pump the

³³ For example, Southern Copper estimated the cost for a desalination plant at Tía María to provide water for a 120,000 tpd operation at US\$95 million. The Tía María project (17.01° S 71.74° W) is located closer to the Pacific Ocean, which means less energy would be required to pump water to the mine site at an elevation of approximately 2500 metres, comparable to Cerro Verde. Cerro Verde's expanded operation production is 320,000 tpd.

water to the site. The need for a substantial supply of electricity creates competition for that resource as well as vulnerability to energy cost increases over time. In addition, there are environmental considerations arising from the discharge of the brine produced in the desalination process, as well as potential air and greenhouse gas emissions if fossil fuel is used to generate power.

Conscious of the need to look for a sustainable solution – one that would benefit all water users and not exacerbate supply issues – mining personnel, in consultation with regional officials, government representatives, civil society groups, and water authority organizations, made the decision to explore the possibility of using treated municipal wastewater for mining operations. The idea had first been proposed by social leaders four or five years earlier and was suggested again in 2007 by local water authorities and endorsed by the professional engineers' association of Arequipa. Although no other mining company in Peru was using water from municipal effluent in its operations, Cerro Verde believed this could be an option for a reliable supply of water not affected by seasonal drought, and there were companies elsewhere using treated effluent. For example, Newcrest's Cadia gold mine in Australia had been using treated municipal effluent to meet 10 per cent of the mine's water needs since 1998. In South Africa, Anglo Plat and Impala Plat in Rustenberg, began purchasing non-potable treated municipal wastewater for use in mining operations in 2003. FCX itself was investigating using treated municipal wastewater at its Candelaria Mine in Chile.

By 2008, two years after the 2006 frame agreement was signed, Arequipa mayors had made little progress securing a site for the proposed wastewater treatment plant and only a handful had deposited the canon minero funding into the trust account established for

financing the plant³⁴. Under the 2006 agreement, each municipality's financial contribution to the WWTP was proportional to their population size: in other words, communities with fewer citizens would contribute less canon minero money than those with larger populations.

Interviewees offered different theories for why the mayors did not deliver on their commitment to use canon minero money for the WWTP.

Mayors of the region were to provide funding for construction of wastewater treatment plant using canon minero money. Didn't work. Mayors did not wish to invest in wastewater treatment. (Interview 12 & 13)

A wastewater treatment plant was not viewed as an attractive way to spend canon minero money . . . few votes associated with sewage treatment versus other infrastructure building. (Interview 06)

Two issues meant that authorities did not use canon minero. The first issue was political. Prefer to use money for little programs/short programs with political benefits in the short term. The second issue was the location of wastewater treatment plant. Municipalities of Uchumayo and Davida or Tiabaya did not wish to have the plant in their community. (Interview 10)

Difficult to know exactly why canon minero money was not made available but it may be that building a wastewater treatment plant was not viewed as a good business opportunity: there is significant upfront expense and limited income. (Interview 06)

Others have suggested that financial difficulties on the part of local municipalities prevented them from depositing the canon minero to finance the WWTP (Roca Servat, 2012). The lack of funding posed one challenge to project planning. Interviewees report there was a second problem. Efforts to find a suitable site for the wastewater treatment plant encountered

³⁴ Interview respondents suggest only three or four of 32 mayors had deposited the canon minero funds.

opposition from residents worried about odour from the plant: sites in four different neighbourhoods were proposed, each was rejected.

Originally the government was meant to build the wastewater treatment plant. Four potential locations were identified for the plant but local communities did not want it in their neighbourhood. Cerro Verde then said they would build it in exchange for 1m³ of the treated water. I think this is a good option. (Interview 11)

In 2008, social leaders proposed that in addition to financing the technical studies for wastewater treatment, Cerro Verde should pay for construction, operation, and maintenance of the plant. This coincided with Cerro Verde's internal discussions regarding the feasibility of using treated wastewater for the expanded operations. It was agreed the idea should be explored.

5.5.6 Consultation

The proposal for Cerro Verde to build and operate a wastewater treatment plant seemed to present a viable solution to the municipal sewage problem and consultation plans were developed to enable public review of the proposal. Engaging stakeholders on a topic with business and social impacts required a multidisciplinary and inter-agency team. The principal players and their main responsibilities are listed below.

- Cerro Verde led the consultation effort to explain the wastewater treatment process, the infrastructure requirements, and how the mine would use the treated water.

- SEDAPAR, Arequipa's regional water and sewage utility, filed the environmental assessment and permit applications for both plant operations and the discharge of treated water back to the Chili River.
- Mayors of district municipalities within Arequipa department are shareholders in SEDAPAR and represented their constituents' interests.
- The federal government and national water authority (ANA) conducted water studies, reviewed the EIA, issued the necessary permits, and ensured permit commitments were met. The regional water authority (ALA) was amongst those encouraging Cerro Verde to consider using treated sewage as a water source for expanded operations.
- Social and professional groups brought forward the original proposal for the mine to consider wastewater treatment, and were active in the consultation effort and discussions about water conservation and efficiency.
- Farmers were engaged in discussions about water allocation, river water quality, the use of treated wastewater, and water efficiency initiatives.

Beginning in 2010, more than 200 meetings and workshops were held to explain the project to municipalities and authorities, to citizens of Arequipa, and to water users upstream and downstream of the mine. The stakeholder groups were broad and diverse. Prominent social groups included the Comité de Lucha, an alliance of a social and labour coalitions, and regional and local elected state authorities; the Wide Civic Frontline of Arequipa, whose members include labour unions, neighbourhood associations, and student unions; the Federation Departamental de Trabajadores (FDTA), a labour coalition formed in Arequipa in 1951; the Association of Popular Urbanizations of Arequipa (AUPA) a neighbourhood

association created in 1955 for discussion on land plots, housing, and public services; FREDICON, the Defense Frontline of the North Cone; Defense and Development Front of Uchumayo; Broad Civic Front (Fronted Amplio Civico, FACA), Association of Popular Settlement Organizations (AUPA), and CONACAMI, the National Confederation of Peru's Communities Affected by Mining – a prominent anti-mining group. (See Roca-Servat 2012 for a detailed description of each group and its role in discussions around water governance.)

In addition to face-to-face meetings, a multi-directional communications program - using social media, television, newspapers, radio programs and advertising - helped to build awareness of the WWTP proposal and solicit feedback. Key issues raised during the consultation included questions about providing the mine with treated water free of charge, the location of the WWTP, the impact on water allocations because of the proposal that the mine receive a volume of the treated wastewater for use in operations, the mine's role in the provision of water infrastructure, as well as issues related to water quality and health, jobs, and education (Interview 10). Most interviewees report that the meetings were productive and established a foundation for ongoing collaboration with farmers on water conservation and efficiency efforts.

One meeting in Arequipa was attend by about 1000 people: La Joya, Arequipa, authorities. The surprise was that the people of La Joya said nothing. Some people in Arequipa – anti-mining people – complained that Cerro Verde would be using the water free of charge. But, in general, the discussion was positive. (Interview 10)

There were challenges. Situation became political. City of Arequipa did not see the benefits initially – lots of meetings, negative comments. It was very tiring. (Interview 14)

I believe [Cerro Verde] did a good job of aligning different actors and of aligning corporate policies, engineering, and construction teams. (Interview 15)

It is very, very important to analyze the social projects with the people not just with government authorities. Important to go into the community to learn about their expectations and needs. (Interview 4)

Interviews conducted in May and October 2016 suggest that Cerro Verde's role in the provision of water infrastructure for Arequipa is accepted.

That Cerro Verde built the wastewater plant and takes one cubic meter of water: I think it is good. (Interview 11)

The project showed us companies can be good partners to resolve environmental problems. (Interview 14)

People are happy. They can see water quality improving every day in the river. (Interview 04)

I believe Arequipa accepts Cerro Verde. (Interview 02)

This view is reinforced by Filippi et al:

“It is important to note that among Arequipeños, there is overall appreciation of Cerro Verde's investment in water infrastructure. More water is available, more inhabitants are connected to drinking water and sewerage infrastructure, and potentially more wastewater will be treated than would have been without Cerro Verde's intervention.” (2014, p. 544)

5.5.7 From Planning and Consultation to Action

By 2011, it had been agreed that Cerro Verde would collaborate with regional and municipal governments and water management authorities to plan, build, finance, and operate a wastewater treatment plant. It was also agreed that the plant could be built on land inside the mine concession thereby resolving the siting issue. In exchange, the mine would receive a

guaranteed volume of treated wastewater for use in the expanded concentrator operations. The remaining treated water would be returned to Chili River helping to rehabilitate the river and improve its water quality, reducing water borne illness, and improving agricultural output. Under the terms of the original “build-operate-transfer” agreement, Cerro Verde was to build, operate and maintain the plant for the first two years during which time there would not be a charge for the use of the treated wastewater. In year three, SEDAPAR would take responsibility for plant operations and maintenance. At the time of the transfer, a fee for the water used by the mine would be negotiated.

The agreement to provide the mine with a volume of treated wastewater for mining operations was a significant milestone. The idea of building the plant with no guarantee of receiving water from it for mining had presented considerable project risk. That risk was exacerbated by the fact that negotiations for the water supply were conducted with SEDAPAR, which is owned by the regional mayors. Negotiations involving several parties can often be difficult. This is especially true in situations, such as this, with a multiplicity of perspectives at the negotiating table and likely some competing political agendas.

Preliminary permits for the mine expansion were granted in 2011 and a construction permit was issued in 2012. Canadian firm, Fluor, was hired in early 2012 as the engineering and procurement contractor and, in June 2013, was announced as construction management contractor for both the US\$4.6 billion concentrator expansion and the US\$550 million wastewater treatment plant. The plant would be built in the Enlozada Gorge, within the mine concession.

The waste water treatment plant, La Enlozada, was commissioned in November 2015 and now treats 85 per cent of Arequipa's municipal sewage³⁵. All costs associated with the wastewater treatment plant came from Cerro Verde's capital budget: no work-for-taxes money was used (Interview 6). Current plant capacity is 1.8m³/second. Representatives of the local water utility, SEDAPAR, owned by regional municipalities, work closely with Cerro Verde personnel to collect the wastewater and monitor water quality. Administracion Techica del Distrito Riego (ATDR) regulates daily discharge of the treated water to the river. Cerro Verde is responsible for day-to-day plant operations and the reporting mandated by regulatory authorities. In exchange for building, operating, and maintaining the plant, the mine gets 1m³/second of the treated waste water for use in mining operations. To meet the projected population growth of Arequipa, the capacity of La Enlozada is projected to increase in two future expansions: to 2.1m³ /second in 2029 with a final expansion in 2036 to increase treatment capacity to 2.4 m³/second until 2043, the projected end of mine life.

Municipal wastewater treatment is a multi-step process. Wastewater is collected at five stations: Arancata, Alata, Tiabaya, Huaranguilla, and Congata. The wastewater is transported via pipeline from the collection points to a sewage pumping station (PPJJ Cerro Verde) for preliminary treatment. Odour control technology is used to scrub emissions, lowering the process odour and its impact on residents of the nearby community of Congata. Water is then transported via pipeline approximately 4500 metres up to La Enlozada treatment plant (PTAR Enlozada), located within the mine concession.

³⁵ A further 14 per cent captured by a smaller plant, La Escalerilla, commissioned in 2015. This plant, located in the North Cone area does not supply water for mining operations.

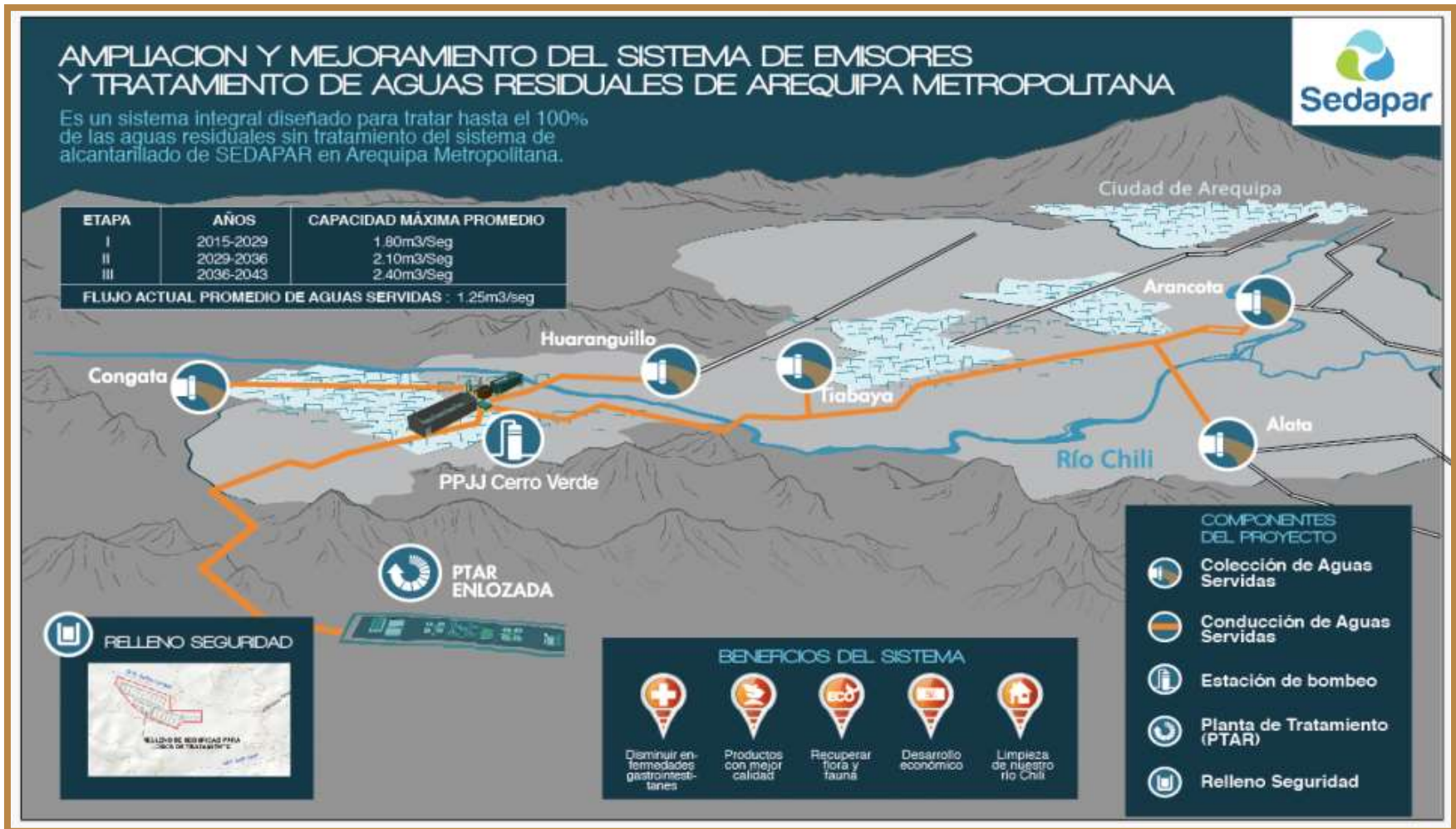


Figure 5.2 – Graphic provided by SEDAPAR illustrating the wastewater treatment system in Arequipa

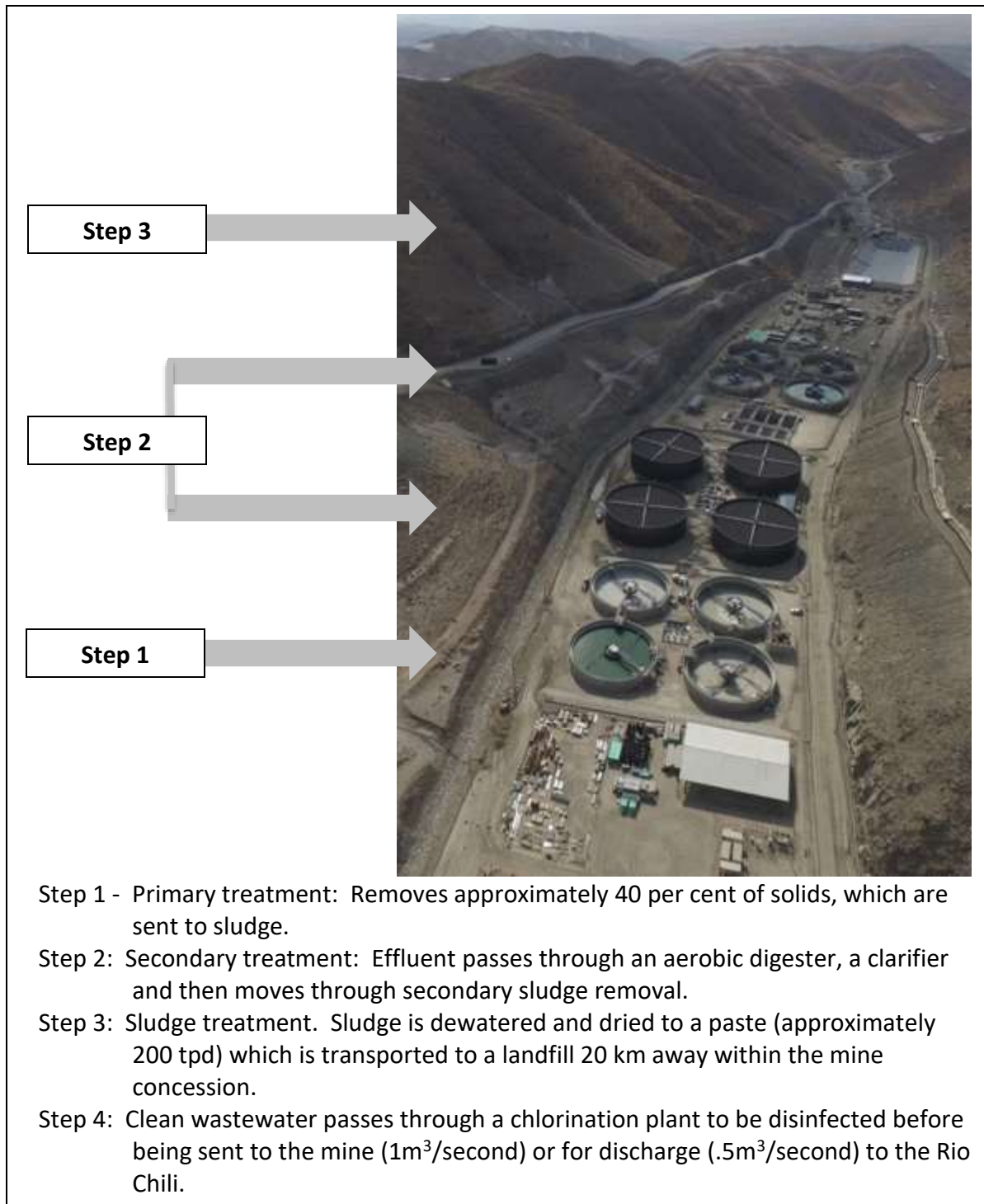


Figure 5.3 - La Enlozada Wastewater Treatment Plant (photo provided by Cerro Verde)



Figure 5.4 Chili River near Congata – Sept. 18, 2015 pre-wastewater treatment (left). Right photo shows the same location post wastewater treatment April 21, 2016 (Photos Jose Luis Valverde, Cerro Verde)

As the photos in Figure 5.4 illustrate, the visual appearance of the Chili River is significantly changed. Interviews with water authorities indicate water quality in the Chili River and in the river basin has improved significantly with biological oxygen demand (BOD) now at 20 – 25 mg/litres. (The BOD norm is meant to be 15 mg/litre, a level achieved in February 2017. Pre-treatment BOD in the Chili River was 5 mg/litre). While officials are pleased to see improved BOD, they remain concerned about coliform levels. In the past, tanneries and slaughterhouses have been guilty of discharging waste without pre-treatment. To curtail the discharge of untreated sewage, ANA and ALA are now imposing penalties of between PS 3500 – 100,000 to those who do not pre-treating waste (Interview ANA and ALA). ANA representatives report that the Peruvian government is promoting the re-use of treated water, especially in arid places like Arequipa, and believe Cerro Verde is the first in Peru to treat and use municipal waste water in mining operations.

5.5.8 Farmers

Agriculture accounts for 80 per cent of the water use in Arequipa (Filippi, Hordijk, Alegría, & Rojas, 2014). Although farmers were not meant to be drawing contaminated water from the Chili River for agricultural use, interviewees report that there was extensive unauthorized use of this water by farmers and others.

Farmers in La Joya were using contaminated Chili River water for agriculture. Meant they could not export products. (Interview 14)

La Joya farmers and the authorities clashed over indirect re-use of water. Problems occurred when ALA tried to control involuntary (unauthorized) use of water. (Interview 12)

Legally, it is not allowed to have in the quantity of water to use in agriculture, sewage. This waste water was not included in the water balance. And also, it is not legally permitted to irrigate the plants, fruits with wastewater. But in the past, in fact, that activity was happening. (Interview 10)

Water theft is an issue. People withdraw water from canals – they pull up in cars and use pumps, ride up on bicycles and load water in plastic containers. (La Joya guide - field notes).

Finding ways to improve access to clean water for the agricultural sector was identified in the Cerro Verde expansion impact assessment as a way to reduce the risk of tension between farming and mining. This led to an agreement between Cerro Verde and the Ministry of Agriculture to support change within the irrigation system and to develop export markets. Through its charitable foundation, Cerro Verde has committed \$14 million for programs to improve water conservation in existing irrigation channels, and to transition from inundation irrigation to more technical irrigations methods such as drip and sprinkler systems.

Interviewees estimate inundation irrigation is currently used by approximately 80 per cent of La Joya farmers.

If farmers are going to increase exports they will need water. They will also need to consider water efficiency initiatives – replacing inundation irrigation - which can cause slumping and erosion - with technical irrigation such as drip irrigation. (Interview 11)

To support conservation efforts, the La Joya farmers' association identified priority areas for water channel improvements. Many existing irrigations channels are dirt, or rock lined, and in poor condition. In the fall of 2016, work, supported by Cerro Verde, was underway to line the channels with concrete to reduce water loss.

The other major initiative Cerro Verde supports in La Joya is training programs for farmers interested in crop diversification. The objective is to transition from water intense crops such as alfalfa, which interviewees indicate accounts for approximately 50 per cent of La Joya's output, to those which need less water to thrive. In the fall of 2016, seven groups of farmers were participating in a pilot study growing avocados and certain types of berry.

If [alfalfa is] replaced with avocado, peppers, you have more money in your pocket and reduce water use by approximately 50 per cent. (Interview 10)

Today, while there are some concerns about the fact that the mine takes 1m³/second of the treated wastewater, thereby decreasing the volume of water in the river by that amount, farmers' water quotas – set by authorities – have not changed. Interviewees felt that the trade

off from a higher volume of contaminated water to a lower volume of clean water is acceptable.

While there are some concerns about the availability of less water they [the farmers] are happy to have cleaner water.” (Interview 14)

In less than one year, farmers can see the difference wastewater treatment makes. They use filters at their discharge points. These are now cleaner, require less frequent change. (La Joya field visit)

I have heard positive anecdotal community feedback: reports of seeing fish return to the river. (Interview 8)

In La Joya people know the water is cleaner but attribute that to increased rain fall – no awareness of wastewater treatment as the cause. (Interview 7)

5.5.9 Challenges, Opportunities and Lessons Learned

While interview candidates agree the arrangement for the mine to treat municipal wastewater in exchange for a guaranteed volume of water for operations works well, they acknowledge challenges were encountered. Interviewees who work for Cerro Verde, or had done so in the past, as well as those employed by the EPCM contractors, spoke of the need to convince their teams of the merits of reclaiming municipal water as a stable source of water for mining operations. It appears the conversation became easier once FCX acquired the mine from Phelps Dodge.

Phelps Dodge had been a conservative company, they questioned the value of transparency, wished to retain control. The site had very little autonomy, [head office] liked philanthropy. Freeport-McMoRan changed the attitude to CSR: committed to increase transparency and to building trust. (Interview 05)

Initially it was challenging to convince internal team. We had to build a case to demonstrate the ways in which the plant would benefit farmers, the environment, and the mine. (Interview 06)

Once the decision had been made by the company to explore treated wastewater as a source for operations, challenges were encountered. One was that the project design relied upon international specifications.

The result [of using international specifications] was that local business could not compete/win contracts. It was potentially less expensive to buy local toilets, roofs, bricks etc. but operators could not meet set standards. Because bricks had to come from US, locals had to be trained to build with US bricks. This was crazy – we Peruvians built Machu Picchu.” (Interview 1)

The second issue was another frequently encountered when siting industrial infrastructure: aligning the technical and consultation timelines.

Major constraint: how would population respond? We didn't want to risk jeopardizing our operations or fuel opposition [to the expansion]. We were also conscious of risking delays to current production. At the same time as we were working on the permitting, the environmental certificate was approved for Conga and protested. Plus, the Tía María review was in progress with a lot of public protest. Originally, we thought approval would take eight months - we felt we knew how to do it because we had done big permits in the past but other factors impacted the review. Took one year and one month. There were a lot of unknowns when we started. Things that seemed logical in the [planning] process did not turn out that way. (Interview 8)

One example was securing the right-of-way necessary for the pipelines for municipal wastewater collection. Interviewees explained that the project design was based on an ideal pipeline right-of-way following the river, through more than 25 farms, but,

Land assembly was challenging. Plans were developed before rights-of-ways were secured. This meant there were many redesigns, which was costly and frustrating as the route kept changing. (Interview 7)

Ultimately the decision was made to install the pipeline in a municipal right-of-way, located within the main road. Due to the project design change, the pipeline installation got underway at the height of the mine expansion construction when close to 20,000 workers were travelling the road each day to reach the mine site. This period also coincided with municipal elections. Interviewees report the traffic congestion was terrible, adding approximately an hour to the already lengthy commute.

We didn't foresee the magnitude of the inconvenience caused during pipe installation. In some moments, I thought that it would be impossible to continue with the project. (Interview 10)

In September 2014, hundreds of locals frustrated by the massive traffic jams took to the streets in Uchumayo to protest. To lighten congestion the company redirected contractors and employees, and deployed its community relations team to try to reduce tension by answering questions and providing information. Protests continued for approximately one week but were localized and did not cause construction delays or halt production at the mine.

Changes to the social chain of custody also affected the consultation timeline. Cerro Verde's team began work on the wastewater treatment proposal in 2007. Between the time of the first public meetings and commissioning of the plant in 2015, new mayors were elected, agency personnel changed, and new citizens moved to the region. Ensuring there was time for new stakeholders to be briefed on past discussions was critical to facilitate their participation,

yet created another constraint on the project schedule. Municipal elections created an opportunity for candidates to present additional terms, including one official's demand for Cerro Verde to contribute an additional US\$150 million to local infrastructure projects (Moya-Ocampos, 2015). Other elected officials and candidates for municipal office questioned the decision to provide Cerro Verde with treated wastewater free of charge, suggesting that in addition to building, operating, and maintaining the wastewater treatment plant the company should also pay for the use of 1m³/second of the treated water. Then,

In late 2014, people in La Joya started to talk about water shortage due to El Nino. They could see plant was in last part of construction. Farmers then expressed concern about Cerro Verde using water from the wastewater treatment plant. Experts predicted there would be sufficient rain but that rainy season would start later. This was true. But farmers were nervous about rain. Led to a lot of meetings while construction continued. (Interview 10)

These issues appeared to have been managed well by the company, and the expansion project was commissioned on schedule in May 2015. The first copper from the expanded operations was produced in September 2015 with full capacity operating rates achieved as planned in early 2016. The wastewater treatment plant began operations in November 2015. Several important lessons were learned during the first year of La Enlozada's operations, including one that changed the terms of the original agreement, which stipulated that Cerro Verde build, maintain, and operate La Enlozada for the first two years in exchange for 1m³/second of treated wastewater provided free of charge.

Once La Enlozada was operating, it became evident that maintaining the quality of the treated wastewater was challenging yet very important. Even minor changes in water quality can cause major disruptions in the flotation process at the mine.

Discovered how difficult it was to work with sewage (Interview 08)

Deviations in water quality can cause major disruptions. Industrial water users in Arequipa are meant to treat water before discharge – not happening. (Interview 03)

Metals and chemicals in the wastewater are a major problem for the system – kills the biological mass. (Interview 02)

This prompted SEDAPAR to reconsider the timing of the plant transfer.

Originally Cerro Verde would operate [the wastewater treatment plant] for two years then hand the it to SEDAPAR. But SEDAPAR understood that Cerro Verde needed a specific quality of water for mining operations and SEDAPAR was not confident it could deliver that quality. (Interview 14)

In addition, SEDAPAR would have to cover the cost of operations (US\$20.3 million in the first year) as well as tax: mining companies' contributions to water infrastructure in Peru are consider a donation subject to a national tax. In 2012, SEDAPAR owed approximately US\$22 million for La Tomilla II, the potable water plant financed by Cerro Verde. The national water regulator – Superintendencia Nacional de Servicios de Saneamiento (SUNASS) - applied to the government for an exemption for SEDAPAR, noting that the inability to pay the tax was a problem many water and sanitation companies faced (Ortiz, 2012). With tax at 30 per cent of capital costs of the project, the amount that SEDAPAR would owe for La Enlozada would be

more than US\$100 million. In the past, SEDAPAR could not charge for the re-use of the wastewater, suggesting there would be no income generated to offset operations costs.

However,

It was recently approved that SEDAPAR will be able to charge for reuse of water. They must respect agreements signed before new rule. Cerro Verde's agreement is grandfathered in. No new agreements are yet implemented. We don't know how it will work. (Interview 8)

The outcome was an agreement to have Cerro Verde continue to assume operations and maintenance costs until 2043, the current projected end of mine life, and to work with SEDAPAR to ensure its representatives receive the training necessary to oversee plant operations. The co-management of La Enlozada is intended to support a smooth transition when SEDAPAR ultimately assumes responsibility for the wastewater treatment plant.

5.5.10 Business Case

The motivation was to do the right thing. It's good business with sustainability at the core. And a sound business decision for shareholders. Being able to operate in a peaceful manner with the community demonstrates the return on investment. (Interview 08)

Cerro Verde's approach was to build a business case with sustainability at the core. It was recognized that to reduce the risk of the type of conflict that had disrupted or stalled other mining projects in the country, it would be critical to avoid placing the mine in competition with farmers for clean water. Evaluation of the river basin indicated already limited volumes of fresh

water had the potential to be adversely affected by drought³⁶, and therefore any proposal to use that source for mining was likely to provoke opposition from other water users.

On the other hand, municipal sewage offered a source of water not in use by others, one that has the potential to be a more reliable supply than fresh water, and that has the potential to increase given Arequipa's growing population. In addition, the re-use of effluent is being promoted by the Peruvian government as a sustainable water supply for the mining sector. This meant the project could help to meet an important policy objective of a key stakeholder.

When considering the business case, it is also relevant to quantify the value of production at risk or the costs associated with delayed production in net present value terms. Cerro Verde's production totaled 1.1 billion pounds of copper and 21 million pounds of molybdenum in 2016; 545 million pounds of copper and 7 million pounds of molybdenum in 2015; and, 500 million pounds of copper and 11 million pounds of molybdenum in 2014 (Freeport-McMoRan, 2016, p. 15). No production days were lost to protests during the expansion, a significant value protection. At a net average realized price of \$3.09/lb. of copper (Freeport-McMoRan, 2015), daily copper production in 2014 would have been equivalent to approximately \$4.2 million/day. Once the expanded concentrator was operational, production increased to 1.1 billion pounds of copper per year, or approximately 3.03 million pounds/day. At the reported net average realized price of \$2.21/lb., daily copper production would be worth

³⁶ In January 2016, the Peruvian government declared a temporary state of emergency with respect to the water supply in the Rio Chili Basin because of drought conditions. As a result, the Cerro Verde water rights from the Rio Chili were temporarily decreased during February 2016 (FCX Form 10K, p.48)

approximately \$6.7 million/day or \$47 million/week in 2016 (Freeport-McMoRan, 2016). These rough calculations do not include Mo production from Cerro Verde (11 million pounds in 2014; 21 million pounds in 2016) but illustrate the value retained from not losing any production days to social unrest.

The business case is reinforced by considering the operating costs of the WWTP versus projected costs of desalination. In its first year, (arguable a costlier year as performance at the new facility is optimized) operations costs at La Enlozada totalled \$20.3 million. Based on Antweiler's model³⁷, desalination costs (factored using electricity prices of .10/KwH³⁸ equal a power cost of .35/m³ with capital costs and maintenance adding another .35/m³) suggest the cost of securing an equivalent volume of water for a 24/7 operation using 1m³/second would be approximately \$22 million. A more expensive operating cost for a facility that would not deliver any social benefit.

5.5.11 Lessons Learned

For other companies considering ways to set business strategy aligned with the UN SDGs, the Cerro Verde case offers some practical lessons. For SDG #6 (Clean Water and Sanitation) it is important to consider water management from the beginning of project planning – making the SDG integral to the strategy versus an add-on. In this case, water was viewed as a shared company-community risk. To execute the strategy required effort inside the company as the local team worked to convince the head office team of the value of the business case, and to

³⁷ Found at: <http://wernerantweiler.ca/blog.php?item=2015-09-01>

³⁸ 2007 rate charged in Peru

convince technical experts of the value of community engagement. Further work was required with external stakeholders.

5.5.11.1 Lesson #1: Build a multi-disciplinary team

Assessing the risk to mining operations from the actions of impacted communities requires different expertise than traditional operational, financial, or legal risk assessment. Many of the skills inherent to social impact, social responsibility, and community relations are also useful when companies are positioning sustainability as a fundamental business strategy. For these reasons, social scientist personnel add value to mining engineering project teams. In Cerro Verde's case, the expansion project team was made up of technical and operations experts, lawyers, and risk managers, as well as community and government relations personnel, and social scientists. The team worked closely to build internal alignment across company functions, and with community stakeholders, to identify opportunities and collaborate to negotiate mutually beneficial agreements. Although the expansion project did not lose any production days to social conflict, there were incidents that had to be managed. Initially, local suppliers were not paid in a timely manner which had the potential to damage Cerro Verde's reputation and erode trust; there were competing demands and changing agendas from municipalities that were prominent during election years; a drought in 2014 heightened tension around water allocations; traffic jams and neighbourhood construction impacts created security issues for the team. However, having an EPCM contractor who understood the importance of engagement served to embed community relations into day-to-day performance, helping the

team address concerns, seek solutions, and prevent conflict from escalating. Interviewees acknowledge there was also an element of good luck at play.

The project team worked hard to build trust. No single person was tasked with community relations – it was intuitively integrated into jobs. Many of the project team spoke Spanish and were very approachable. [The project leaders] understood the importance of community relations and sustainability. But there was a large element of good luck – many good things happened by chance. (Interview 07).

Good community relations happened due to trust and integrity built at an individual level. Worked out well, but luck played a large part. (Interview 01)

It helped that authorities at SEDAPAR stayed in the same positions for the better part of eight years (president and board chair). That was lucky . . . enabled trust to be built. (Interview 8)

While there may have been an element of luck in assembling a project team that worked well together and that embraced the importance of strategic engagement, the outcome can be replicated. Companies can formalize a commitment to hire local people who understand the culture and speak the language; corporate teams can grant their local colleagues autonomy to manage projects in their own region as Freeport appears to have done with Cerro Verde; teams can be provided with training on community engagement; and new hires can be screened for emotional intelligence as well as technical skills.

5.5.11.2 Lesson #2: Engagement, flexibility, and innovation contribute to success

Communities are not homogeneous. They are made up of many distinct groups, with different – sometimes conflicting – needs and expectations. In Cerro Verde’s case, stakeholders included City of Arequipa residents, a population that has increased significantly in recent years due, in

large part, to in-migration from the highlands. This in-migration has resulted in new neighbourhoods in areas where the city has not planned for services. Farmers in the agricultural region of La Joya are equally important stakeholders but with very dissimilar needs and interests from those living in the city. The interests of government officials, water regulations and authorities, civil society organizations, and the company's head office executive and shareholders, made each group important stakeholders for the project. The diversity of stakeholder interests meant finding projects that matched community aspirations with business needs required a willingness to engage, remain open to new ideas, and commit to collaborate on solutions to what might have become intractable problems. In this case, the idea of the mine treating wastewater in Arequipa was originally proposed by social leaders, then supported by regional water authorities. The company's willingness to engage, listen, and learn from its stakeholders, meant the idea was heard and subjected to technical review.

As social conditions and elected representatives have changed, there have been calls to renegotiate the original agreements for wastewater treatment and the provision of water for mining operations. Changes to the social chain of custody can also occur within the company. In Cerro Verde's case, key company representatives in Arequipa have remained surprisingly constant, helping the company to withstand the risk arising from the departure of those trusted by the community. Nevertheless, there is broad recognition that ongoing engagement and multi-directional communication is a requirement for continued success.

5.5.11.3 Lesson #3: There are multiple realities

Any project that seeks to address social issues in the context of business decisions is susceptible to disparate viewpoints. In Cerro Verde's case, there are those who feel the company has too

much power in Arequipa's water governance (Roca Servat, 2012) and others who have suggested the company should do more. In September 2015, the mayor of Ciudad Blanca generated news headlines when he demanded Cerro Verde contribute an additional US\$150 million to local infrastructure (Moya-Ocampos, 2015), and the decision to have Cerro Verde operate La Enlozada beyond the first two years of the plant had some mayors calling for Cerro Verde to pay for water as well as all operations and maintenance costs of the plant (BN Americas, 2014).

In the agricultural region of La Joya, interviewees suggest the farmers are happy - that they can see and smell improvements to the water - but they observe that there is a perception that there is less water for farmers due to 1m³/second of the treated wastewater being allocated to mining operations. During field visits to La Joya, a group active in the Tía María opposition, was running radio ads alleging the mine was taking water away from farmers. These "perceptions may be founded on scientific or unscientific data and stem from the individual frames of reference, which are formed by the information people have, the degree to which they understand the information, the trust they have in the individuals involved, and experiences they have had in similar situations" (IFC, 2014, p. 12).

Farmers are concerned about water volumes. Believe they get less water now. But, Cerro Verde is using treated wastewater not water from the river. (Interview 02)

It is unlikely that there will ever be one shared view of water use or water governance, but agreement is growing that private public partnerships and collaboration are required to address what academics call "the grand challenges" associated with sustainable development

(George et al.2016). When companies employ science-based standards this information can be shared to inform discussion. For example, before the wastewater treatment project, water authorities such as ALA and ANA did not have information on quantities of water for users. This information was demanded by farmers in La Joya but water authorities could not provide a scientific measurement of available water volumes. As part of the wastewater treatment, there is now a process to measure water flows and this information has helped to demonstrate to La Joya that there is sufficient water to meet demand (Interviews 9, 12, 13, 14).

5.5.11.4 Lesson #4: Public private partnerships can deliver business benefits while addressing social issues.

La Enlozada was the first public private partnership undertaken by SEDAPAR. In interviews, respondents indicated they liked the approach used to integrate engineering, operations, and construction within the partnership team, and the approach taken to share responsibility and build local capacity.

[The process] taught those involved how to avoid social conflict: the situation is a win-win. Miners get water; region gets environmental improvement; people get clean water. It showed us companies can be good partners to resolve environmental problems. There were challenges but we were convinced this was the way to do it. The experience provides a template of sorts for use with other projects and companies. (Interview 14)

5.5.11.5 Lesson #5: Sustainability delivers a return on investment

The Cerro Verde decision to build and operate a waste water treatment plant in exchange for a supply of water for mining operations is a compelling example of an initiative that benefits both mine and community. In addition, the company enhanced its reputational capital by delivering

on its social commitment. As noted in Chapter Two, research indicates the financial value of a good reputation, and that corporate reputation is a strategic asset contributing to profitability (Fombrun and Shanley, 1990; Roberts & Dowling, 2002; de la Fuente Sabate & Quevedo Puente 2003; Barnett, 2006; Eccles, Newquist and Schatz, 2007; Herz, La Vina, & Sohn, 2007; Suh, 2007). It can be argued that Cerro Verde further built reputation capital by supporting regional progress on SDG#6 (access to clean water and sanitation) and, as noted earlier, the company did not suffer financial or reputational loss from delayed production or protests that have crippled other Peruvian mining projects.

5.5.11.6 Lesson #6: Successful projects identify opportunities for future projects

Reflecting on projects from the vantage point of completion can identify areas for future consideration. In the case of La Enlozada, interviews with project stakeholders, the literature review, and my own applied experience in CSR for mining companies have generated four ideas for additional opportunities to build trust, advance the SDGs, or created shared value.

1. Work collaboratively with international EPCM companies to design project specifications so a greater number of local companies can compete. This can be done without sacrificing criteria to compile with international standards, although it may require clauses to enable coaching or preferential bidding for local companies. Another option is to break large contracts into smaller packages with local criteria built into the bid process. The benefits to using local companies can offset costs that may be accrued. For example, extending indirect and induced job opportunities, regional economic development, building local capacity, and strengthening social capital. To reduce the risk of community-based businesses being shut out of contracting opportunities, there are several actions companies

can take in the project planning stage. These include developing an inventory of existing businesses, pre-qualifying local suppliers and placing them on the bid list, and encouraging community relations work closely with procurement personnel to identify and publicize supply needs and opportunities. The experience of companies which have concluded IBAs with Aboriginal groups in Canada could provide guidance on how to address this challenge.

2. Introduce participatory water monitoring. These committees can be managed by an external expert (academic, consultant, social leader, etc.) or by the company with external input. Effective participatory water monitoring committees seek input from locals on the performance indicators to track, and agree to clear rules for collecting and reporting data. The IFC and others suggest using science-based standards for water sampling, analysis, and reporting, and note the importance of continuity over time. These committees require funding to fulfill their mandate, with the costs typically assumed by the mining company. One benefit of these committees, as reported by companies using this approach, is an increase in reputational capital. This results from the first-hand experience of community members working with mining company personnel and at mining operations.
3. Turn sludge from waste to a marketable product. A by-product of Arequipa's wastewater treatment is approximately 200 tpd of sludge, which is classified as a hazardous material, and transported to a landfill 20 km away within the mine concession. Re-use of this material is not currently permitted in Peru but examples from other jurisdictions could provide guidance on how to turn this waste into products such as fertilizer. In British Columbia, for example, Highland Valley Copper and Catalyst Paper both have programs in place to treat operations sludge that have proven successful.

4. Investigate the potential for power generation from discharge of treated wastewater to the Chili River. Ongoing collaboration with water authorities and others interested in SDG #7 Affordable and Clean Energy might make this an option worth review.

5.6 Measuring Success

“The mining industry has to change. We need to see more of what Cerro Verde did to link a technical solution to a social solution. It’s a win-win approach.”

Fernando del Castillo, General Director, Office of Social Policy, Ministry of Energy and Mines, Peru speaking at the PDAC 2017 convention in a session profiling Cerro Verde “Innovative Social Investments in Peru: What are the good practices in engaging with external stakeholders around mining operations?”

Building a business case with sustainability at its core sounds admirable, but does it deliver a return on investment sufficient to satisfy shareholders with a short-term focus? This is difficult to answer based on research conducted for one operation of a company rated as the second largest copper producer in the world. However, the evidence from the Cerro Verde research suggests the company achieved a positive response to the successful execution of the \$4.6 billion expansion project. There is a sense of pride evident when talking to Cerro Verde and SEDAPAR representatives, and acknowledgement amongst others interviewed that the approach to address a business need and a social need has delivered a positive result: an accomplishment recognized by the U.S. Department of State’s Bureau of Economic and Business Affairs, which awarded the 2016 Secretary of State’s Award for Corporate Excellence (ACE) in Transparent Operations to Cerro Verde.

For the company, there are four key measures of success, noted earlier and summarized here.

1. Unlike other projects in the region, Cerro Verde did not experience any lost production due to community opposition.
2. A water supply for expanded operations was secured.
3. By agreeing to operate the wastewater treatment plant, the mine can monitor water output thereby reducing the risk to concentrator operations associated with variability in water quality.
4. By using treated waste water, which is not a water source included in agricultural allotments, Cerro Verde avoided competition with farmers for scarce water resources.

Equally important when assessing sustainable development is the fact that the wastewater treatment plant delivers clear benefits to the community.

- Approximately 99 per cent city sewage is now treated, making the wastewater treatment plant an example that delivers benefits not just to a few elites but distributes benefits to all.
- Fecal coliform levels in the Chili River have been reduced (Table 5.6), which will reduce incidents of water-borne illness.
- Co-management of the wastewater treatment plant is building local technical capacity.
- Part of the wastewater treatment plant operations includes measuring water intake from the Chili River. This systematic approach means that water authorities ANA and ALA have access to scientifically measured water volumes. Sharing this information has helped to answer questions from stakeholders about water allocation and availability.

- The improved water quality in Chili River basin will enhance agricultural production, as well as support recreational activities and tourism opportunities for the region. In March 2017, officials report that trout were photographed in the Chili River near the Arequipa community of Uchamayo.

Measure	Maximum Standard MPN g/TS	Average <u>before</u> discharge point to river MPN g/TS 2013	Average <u>after</u> discharge MPN g/TS 2013	Effluent discharge MPN g/TS 28/02 2017
Fecal coliform/100 ml	10,000	1441	4,780,915	23
BOD mg/l	100	2.5	123.64	15

Table 5.4 – Chili River fecal coliform and BOD counts post wastewater treatment

Ongoing projects are helping to solidify the Cerro Verde’s reputation capital. The company is continuing work with farmers La Joya to support water efficiency and conservation programs, and to provide education and training to enable farmers to switch from inundation to technical irrigation. In addition, the company, through its charitable association, is working in collaboration with a non-governmental organization and government agencies to support crop diversification initiatives. The objective of these programs is to help farmers move away from water-intensive crops to those which need less water to thrive.

5.7 Conclusions

The point of intersection between a company’s needs and a community’s needs creates the potential for conflict. It also creates an opportunity for mining companies to make a significant contribution to sustainable development. As this case illustrates, water scarcity can inspire creativity when viewed as a shared risk to be managed not just as an operational issue but with a catchment-based approach that considers other users. While corporate action on sanitation

may be nascent, such efforts can enhance a company's reputation and increase long-term business resilience:

The corporations that win in today's competitive, resource-scarce and hyper-transparent world are those that create real value for society. They are those who see their success as inextricably linked to the success of the world around them. The interconnectedness of water and sanitation on all aspects of economic development is undeniable. According to the United Nations, "For each dollar invested in water and sanitation, on average there is a return of eight dollars in costs averted and productivity gained. (Schulte & Fenwick, 2014, p. 21)

By working collaboratively with water stakeholders, an opportunity that met both a business need and a social need was identified. Finding this point of intersection enabled Cerro Verde to secure water for mining without the conflict that can result from competition for a scarce resource. For Arequipa, the outcome is equally positive: sewage treatment in the city, rehabilitation for the Chili River, reduced incidents of waterborne illness, and improved agricultural production. In addition, La Enlozada wastewater treatment plant offers an example of a project which supports the United Nations Sustainable Development Goal #6 – access to clean water and sanitation - and illustrates the role mining can play in helping to achieve sustainable development in resource-rich countries.

RESEARCH QUESTION	CASE FINDING
<p>What approach did Cerro Verde use to secure social permission in a country with highly mobilized opposition to mining?</p>	<ul style="list-style-type: none"> • Collaborative approach to issues identification, moving the discussion from a demand for compensation to water infrastructure. • Respecting the timeline required for effective engagement. • Empowering the local team and investing in community relations.
<p>Can measurable business value be generated through clear identification of social problems that intersect with industry needs?</p>	<ul style="list-style-type: none"> • Case illustrates the return on investment that can be achieved when sustainability is a core consideration in a business decision. • Business value can be measured: no loss of production due to protests; secure and drought resistance source of water for operations.
<p>If CSR is positioned as a strategic function, will that stimulate new opportunities for companies, civil society organizations, and governments to collaborate to address issues of mutual interest and reduce mining-community conflict?</p>	<ul style="list-style-type: none"> • Cerro Verde identified the importance of avoiding competition with farmers for water. That strategic decision facilitated a collaborative partnership to address an issue of importance to both business and society. • Cerro Verde has built trust that should help to sustain the company's reputation capital as future issues arise.

Table 5.5 - Summary of research questions and case outcomes

The case confirms that interactions between mining companies and communities regarding water can be complex and multi-faceted. To be successful requires time and, for the company, an interdisciplinary team. The technical expertise of engineers and other professionals will not be appreciated by community stakeholders if the company has not invested the time to learn about community interests, assets and needs; build trust; and speak to be understood.

The question of the business case for CSR has long troubled both practitioners and academics. This case should help companies wishing to establish sustainability as a core business strategy. The scorecard, developed as part of this research and depicted in Table 5.8,

may also help to identify performance metrics that can be associated with strategic CSR initiatives that can be used by others.

CERRO VERDE CIRCLE OF WATER: CSR/SUSTAINABILITY ASSESSMENT			
Business need:	Water for expanded operations		
Unmet social need:	Water <ul style="list-style-type: none"> • Access to 24/7 in home potable water • Wastewater treatment for City of Arequipa • Chili River rehabilitation • Water conservation & efficiency 		
Relevant SDG:	#6 Clean water and sanitation		
Key partners	Cerro Verde Mine	FCX	EPCM
	ALA	ANA	SEDEPAR
	Social groups	Arequipa municipalities	Farmers
SOCIAL GOALS	MEASURES OF PROGRESS strong (S), medium (M), weak (W)		Work in Progress (WIP) Completed (C)
Environmental impacts <ul style="list-style-type: none"> • Reduce fecal coliform counts in Chili River • Improve water conservation & efficiency 	<ul style="list-style-type: none"> • Fecal coliform count (S) • La Joya technical irrigation (M) • La Joya canal lining (M) • Crop diversification (W) 		WIP WIP WIP WIP
Health impacts <ul style="list-style-type: none"> • Reduce incidents of water borne illness • In home 24/7 potable water for City of Arequipa residents 	<ul style="list-style-type: none"> • Annual health assessment (M) • La Tomilla commissioned 2012: in-house potable water 24/7 to 300,000 (S) 		WIP C
Economic impact <ul style="list-style-type: none"> • Increase agricultural production for sale and export 	<ul style="list-style-type: none"> • Regional agriculture revenue (W) 		WIP
BUSINESS GOALS	MEASURES OF PROGRESS strong (S), medium (M), weak (W)		Work in Progress (WIP) Completed (C)
Operational <ul style="list-style-type: none"> • Secure water supply for expanded operations • Water quality for optimal concentrator performance Economic <ul style="list-style-type: none"> • Reduce/eliminate days lost to social opposition • Reduced absenteeism due to illness Sustainability <ul style="list-style-type: none"> • Partnership to advance SDGs 	<ul style="list-style-type: none"> • 1m³/second from treated wastewater (S) • Cerro Verde responsibility (S) • No production days lost 2015-2016 (S) • TBD • Co-manage WWTP with SEDAPAR (S) 		C WIP WIP WIP WIP

Table 5.6 – CSR/Sustainability assessment developed by the author, adapted from a dashboard developed by FSG consultants.

Today, Cerro Verde continues work to support agricultural and water efficiency programs in La Joya, to review long-term options for the management of La Enlozada, and to consider additional sustainable development ideas. Part of Cerro Verde’s success stems from its willingness to build a community relations group within the company and to establish initiatives that work across all three pillars of the CSR continuum: transactional philanthropy to redistribute wealth within the region; performance optimization to reduce the mine’s environmental footprint, increase water efficiency, and fund infrastructure projects such as La Tomilla II which deliver benefits to other water users; and the strategic approach of using a private public partnership to build, own and operate La Enlozada, which treats municipal wastewater to secure a supply of water for mining operations. Table 5.7 illustrates Cerro Verde’s long-term approach, which has advanced the SDG#6.

SOCIAL ISSUE: Access to in-home potable water. Sewage treatment.		
BUSINESS ISSUE: Securing water for expanded operations		
TRANSACTIONAL CSR: PHILANTHROPY	TRANSITIONAL: DOING WELL BY DOING GOOD	TRANSFORMATIVE CSR: CREATING VALUE
Cerro Verde Civil Association Established 2008 <ul style="list-style-type: none"> • Money donated US \$132 million to end of 2015 • US\$14 million allocated to water conservation and efficiency efforts 	<ul style="list-style-type: none"> • Local workforce • Local suppliers • Zero discharge • Potable water plant 	Wastewater treatment plant: <ul style="list-style-type: none"> • Sewage treatment for city • Drought resistance water for operations • River rehabilitation <ul style="list-style-type: none"> ○ Reduced incidents water-borne illness ○ Clean water for agriculture

Table 5.7 – Cerro Verde’s activities across the CSR continuum

The ramifications of these findings, and the opportunities for mining companies willing to reframe their approach to CSR to advance the 2030 SDGs is discussed further in the next, and final, chapter. The temporal boundaries of transactional, transitional, and transformative CSR

will be reviewed to support the thesis that CSR remains vital and valuable, but that to add business value a strategic and collective action approach needs to be taken.

Chapter 6: The Path Ahead: Mining's Role in the 2030 SDG Agenda

As discussed in earlier chapters, mining-community conflict is growing around the world. Incidents are happening in countries new to mining, such as Mongolia, and countries, including Canada and Australia, where mining is a long-established industry. Some types of disagreement yield benefits. The feedback offered by stakeholders can alert miners to issues or sensitivities of which they were not previously aware. In addition, there are situations where community concerns can be the impetus for solutions to technical problems best addressed by a collaborative approach. The Cerro Verde case is one example. But in other situations, conflict imposes financial and social costs on both company and community. Previous research has attempted to quantify the number of conflicts but has not classified levels of conflict. This research reviewed media coverage to identify situations of mining-community conflict, then used a scale to distinguish differences of opinion from more severe incidents of conflict. With only serious or sustained conflict captured, it is alarming to see the increase from 33 conflicts in 2012 to 55 in 2015. To answer the question of why conflict is increasing, the causes of conflict were coded. It was discovered that the drivers of conflict are often complex and interwoven. For example, a situation reported in the media as arising from environmental impact, may have roots in cultural traditions, land ownership or use, or human rights. While conflict appears to be motivated by concerns about livelihood, security, and environmental impacts, the perception that the well-being of community members has not increased in proportion to the profits of mining companies must also be considered (Bebbington & Bury, 2009).

The causes of conflict are one part of the puzzle and give rise to additional questions: why is conflict growing when there are so many good tools to support CSR, and despite efforts

on the part of some companies to act in a more socially responsible manner? It seems unlikely, especially in today's hyper-connected world, that any company sets out to intentionally stimulate conflict. The costs of company-community conflict have been quantified (Davis & Franks, 2014) in both financial and reputational terms. John Browne (2015), John Elkington (2016), Michael Porter and Mark Kramer (2011), and others, suggest that popular approaches to CSR are failing. They believe that traditional CSR programs, grounded in philanthropy, are disconnected from the company's core business, are run by personnel who themselves are disconnected from the core business (Kemp & Owen, 2013), and often become box ticking exercises susceptible to funding cuts during times of market downturns. Critics of traditional (labelled in this research as transactional) CSR acknowledge that these programs have yielded benefits, such as improved business ethics, yet argue that transactional CSR lacks the power to change the trajectory of society. Some mining companies will argue that it is not the role of industry to change society. Others may argue that good governance of natural resources is the role of national governments, not individual companies or multi-national corporations. Since natural resources are morally neutral³⁹, it can be said it is the responsibility of host governments to ensure that mineral extraction is done in a manner that generates the greatest good for the greatest number. There is validity to these claims. However, while it is government's role to act as trustees of their country's natural resources, some countries have abdicated that responsibility. Furthermore, political uncertainty (exemplified in 2017 by Britain's exit from the European Union, and American President Donald Trump's decision to

³⁹ Resources may stimulate conflict and corruption but those events arise from the actions of companies, governments and individuals. Therefore, the resource itself can be said to be morally neutral.

withdraw from the Paris Climate Change Accord and the associated unravelling of environmental protection measures and agencies) suggests business will need to take a greater role in addressing environmental and social issues to secure a “social license to operate”.

There are examples of companies, such as Anglo American, that have taken a leadership position advocating for an innovative approach to mining. Anglo’s work with Northwestern University’s Kellogg Innovation Network (KIN) is an effort to transform mining’s traditional business model into one where mining companies become development partners with host communities. Companies, such as Gold Fields, have embraced the ideology of creating shared economic value. Others have supported work done by the World Economic Forum, or the Business and Sustainable Development Commission, to align mining with the UN Sustainable Development Goals.

This chapter continues to explore the opportunities created when companies embed CSR in business strategy. A growing number of mining-community conflicts coinciding with more tools to support social responsibility suggest that the mining industry’s traditional ways of thinking about social problems are not working. More than a decade ago, it was noted that there is no evidence that good community relations are directly related to the amount of money spent on CSR (Zandvliet, 2004). Nevertheless, the money allocated to community relations or community investment continues to be a popular reporting measure. Tools such as philanthropy may have been (and may continue to be) sufficient when initiated by local companies with a strong community presence and high trust levels. However, much mining today is undertaken by global companies that lack a close, historical connection to local communities and residents, and, as the examples discussed in Chapter Three (particularly the

Tía María project) suggest, philanthropy alone is not sufficient to reduce mining-community conflict.

6.1 Opportunity to Reframe CSR

In Chapter Four, it was proposed that the UN 2030 Sustainable Development Goals present mining with an opportunity to reframe CSR and align business more closely with the values of society. The SDGs have a relevance to mining in several ways. First, mining has contributed to many of the issues the SDGs seek to address. The principle causes of mining-community conflict identified in Chapter Three are beneficiation failure, land use, and environment, with water a frequent cause of company-community tension. These issues map to SDGs #16 (peace, justice, and strong institutions), #15 (life on land), #11 (sustainable cities and communities), #13 (climate action), and #6 (water and sanitation). The second point of relevance is that all countries that experienced mining-community conflict during the 2012 – 2015 study period are members of the United Nations and amongst the 193 signatories to the SDGs. This situates resource-rich nations amongst those governments committed to establishing a framework for achieving the global goals in their country. With the agenda for the goals agreed to government, the SDGs should engage regulators and influence policy makers at all levels of government: all important stakeholders in mining projects.

The common agenda of the SDGs therefore provides mining companies, communities, development agencies, civil society organizations, government, regulators, and other stakeholders a framework for addressing social issues of importance to multiple groups. This suggests the SDGs can be used to generate conversation and offer a model of engagement

based on mutual interests. There are three potential obstacles related to the model of engagement that merit consideration.

The first is that communities and government at all levels may resist entering discussions with mining companies, even if the purpose is to address sustainability issues of importance to the community. For example, given the highly-polarized debate and low trust surrounding the Tía María project, it is difficult to imagine regional representatives negotiating a SDG-linked project with Southern Copper, especially one that might benefit the contested mine. The second challenge is communities may lack capacity, or the institutions and governance capabilities, to undertake projects aligned with ambitious SDG goals. This research proposes use of the CSV strategy to establish a collaborative framework to reduce these weaknesses yet acknowledges there are many situations that are likely to prove challenging. The third issue is one of accountability. Using the SDGs to find common ground between the interests of mining companies and of host communities does not absolve companies from the requirement to manage their operations responsibility and mitigate adverse impacts that are outside of the SDG – of SDGs – selected for collaboration. In other words, companies will need to work on multiple fronts. In the Cerro Verde case, the wastewater treatment plant aligns with SDG#6 but the company also has a community relations department and a philanthropic foundation to support education, culture, and health projects.

In collaborative partnerships to address the SDGs, each party should focus on what it can do best. Mining companies are well positioned to contribute. Mining engineers are trained as planners and builders and have effective problem-solving skills. These technical skills, plus the convening power of multi-national corporations, can be harnessed for the SDGs. In

addition, mining personnel often have relationships with elected officials and government departments. These professional networks can complement, or extend, those of other organizations, such as development agencies or NGOs. Mining companies and their supply chain partners also have access to networks to further mobilize resources for project execution.

Finally, many mining projects have a life of mine that extends several decades from discovery to closure. This means that mining is ideally positioned for the long-term planning required to advance the SDGs. In exchange, the SDGs may offer a means for mining to overcome agency problems associated with changes in company's social chain of custody. Using the SDGs to set an enduring agenda for social responsibility over the life of mine may provide stakeholders with sufficient common ground to withstand the turmoil that can result from personnel changes within mining companies and partner organizations.

6.2 Transactional, Transitional, Transformative: When to Use which CSR Approach?

The three stages of the CSR continuum were introduced in Chapter Two. Residual CSR is labelled as either transactional or transitional. Philanthropy typifies transactional activities. Donations of cash, goods in kind, and employee volunteerism can be initiated quickly and can serve to introduce project personnel to community members. These activities can help to build social capital and trust. This makes one-way transactional activities a critical component of the CSR toolkit but, as illustrated in earlier chapters, philanthropy is not where companies can have the biggest impact. An example from outside the mining sector is provided by candy manufacturer, Mars. The company has a history of philanthropic investment in the cocoa communities of West Africa. For years, Mars funded community projects, such as building schools, but came to realize these efforts alone would not solve problems associated with

collapsing cocoa yields. Following a period of engagement with stakeholders, the company worked with governments, industry partners, and NGOs to address the cocoa supply problem at scale.

Transitional CSR begins the process of two-way engagement and identifying potential groups or agencies for more collaborative partnerships. This is important because to build trust, and begin to deliver a return on investment, communities need to be involved in decision-making (Zandvliet, 2004). The Mount Milligan Community Sustainability Committee, described in Chapter One, is an example of a transitional CSR action.

Value-add initiatives are considered as transformative CSR. Initiating these projects requires that trust between company and community is well established: benefits will not be accrued immediately and therefore communities need to be certain the mining company can be trusted to deliver on long-term commitments. These projects can also build trust as parties to the agreement work towards achieving a common agenda, such as the one proposed by the SDGs.

While academic literature and practice are clear about the activities of each CSR stage, there is little discussion about when to use which approach, or if there are temporal boundaries within the CSR continuum. In this research, a time frame has been imposed upon the CSR continuum (see Figure 2.2). The time frame proposes that residual CSR activities are aligned with a short-term time horizon of between one to five years, with value-add approaches requiring five or more years to implement. To support mining companies, accustomed to a pragmatic engineering approach, a model (Figure 6.1) is proposed to provide guidance on the CSR approach best suited to life-of-mine stages.

The model is built upon a foundation common to all social responsibility programs, regardless of industry sector or temporal considerations. The base components are procedural fairness, legal and regulatory compliance, and transparency. These can be classified as ethical behaviour. Sustainability is also presented as a key component of all CSR initiatives: as was suggested in Chapter Two, CSR in the mining sector should encompass sustainability, as it is an area of shared interest for companies, communities, regulatory agencies, governments, indigenous peoples, and other interested parties. For the model to have relevance for the mining sector, the standard life of mine stages (exploration, construction, operations, and closure) are plotted along the CSR continuum. The time allocated for each LOM stage,⁴⁰ where CSR programs may be implemented, is based upon ICMM (2012) work. At each phase of development, trust is needed and is built through engagement with the communities that sustain mining.

The model positions philanthropy as an ongoing tool to redistribute wealth, support causes important to company personnel, and address community wish lists. The dollar value of the contribution will vary depending on the size of the project and company – or companies – conducting activities at each stage of LOM. It is predicted that budget allotments for philanthropic giving will reflect revenue generation; in other words, it is assumed there will be a larger budget for philanthropy during operations than any other LOM stage. However, as a project advances the percentage of the total CSR budget allocated to philanthropy may decline

⁴⁰ While it may be appropriate for mining companies to continue CSR activities post-closure, additional research will be required to investigate common practice and to examine the best way for companies and communities to continue beyond environmental protection or mitigation post closure. There is a paucity of literature on this topic and for this reason, this research only proposes a CSR model from exploration to closure.

as transitional and transformational initiatives are introduced. Nevertheless, it is recommended that some amount of philanthropic giving be continued over the LOM. Traditional community investment is expected by many and can generate positive publicity and goodwill for the company. Transactional CSR can also include goods in kind and employee volunteer work. For example, the loan of equipment and personnel to support a community project. A colleague, working for a Canadian junior exploration company in a developing world country, looked for small ways to support the nearest community. Following heavy rainfall in the region, the project manager volunteered a crew member and the company's earth moving equipment to help repair a dyke. This action was viewed positively by the community, yet had minor impact on the exploration budget.

As the project advances to construction, it is proposed that transitional CSR be introduced. Once initiated there will be opportunities for transitional CSR for the remainder of LOM. These projects will support efforts to maintain and build trust, and identify groups or agencies for future partnerships. Ideally, initiatives undertaken at this stage begin to involve the community in two-way conversations and decision making. The timing of the introduction of transitional CSR is important. Ideally, transitional CSR should be introduced before nearby communities become accustomed to – or dependent upon – philanthropy. Activities that meet the criteria for transitional CSR include projects undertaken with local educators for the joint development of training programs. Another way to support two-way communication is to purchase goods and hire locally. As community businesses and residents work for the company and get first-hand experience with the project, they can relate that experience back to family and friends. If the experience is positive, local employees, suppliers, and other community

stakeholder become ambassadors for the project, helping the company to earn its “social license to operate”. Companies are encouraged to consider ways to broaden the number of local jobs offered. For example, instead of hiring one person for a position, opportunities for job sharing could be investigated. Or, a larger number of short-term positions could be offered instead of one longer contract. Both tactics make employment more attractive to those entering the wage economy for the first time or those who pursue a traditional life on the land. Discussions with community representatives, indigenous groups, economic development officers, and others connected to the local economy and culture can inform the company’s transitional CSR programs.

A further practice which appears to reduce conflict is for companies to share infrastructure. The cell tower at Mount Milligan, discussed in Chapter One, is one example of infrastructure installed for company use that delivered an associated community benefit. Zandvliet (2004) describes the initiative of an oil company in Nigeria to provide nearby communities with electricity from gas the company produces. The program served to reduce incidents of conflict because the consequence of a production stoppage at the oil field was a power outage for the community. Performance optimization initiatives, such as greenhouse gas emissions reduction, energy conservation, and water recycling are other examples of transitional CSR that can deliver benefits to both company and community. Local representatives can also gain a voice in decision-making through transitional activities such as the establishment of community advisory committees and participatory monitoring groups.

The final stage of the CSR continuum, transformational CSR requires that the mining company has earned stakeholder trust. The long-term nature of transformational CSR makes it

ideally suited to the operations phase of mining projects. However, initial planning, including identifying potential opportunities and partners for collaboration, should begin in the construction phase. This is recommended for several reasons. The transition from construction to operations is often a period when community expectations are increasing; when there can be changes in the social chain of custody as the EPCM team hands over project control to the operations team; and when mining projects and host communities are vulnerable to social risk (Davis & Franks, 2014). To be successful, transformative initiatives require a longer planning period. Introducing the concept of transformational CSR at the construction stage is recommended as three to five years is required to plan projects to create shared value (Porter, 2016). Of note, Cerro Verde began planning for the wastewater treatment plant in 2007 and commissioned the facility in 2015. An example from a sector other than mining is offered by international fertilizer company, Yara. In 2008, Yara led an initiative to form a partnership in Tanzania to create reliable markets, improve farmer yields and earnings, and strengthen the economic value chain. The partnership was initiated in 2009. A blueprint for the Southern Agricultural Corridor of Tanzania (SAGCOT) was proposed at the World Economic Forum in 2011. The formal programming began in 2014 (Porter, Kramer, Ramirez-Vallejo & Herman, 2016).

It was suggested earlier that budget allotments for CSR are likely to reflect revenue generation, increasing as commercial production is achieved, and tapering off as the mine nears closure. Company-community partnerships using the CSV strategy should continue to capture value and generate economic benefit as commercial production slows. These partnerships should be transitioned to become fully administered by non-mining entities as part of closure

planning. During closure and decommissioning, management of projects, especially those linked to the SDGs, should transition to non-mining partner organizations.

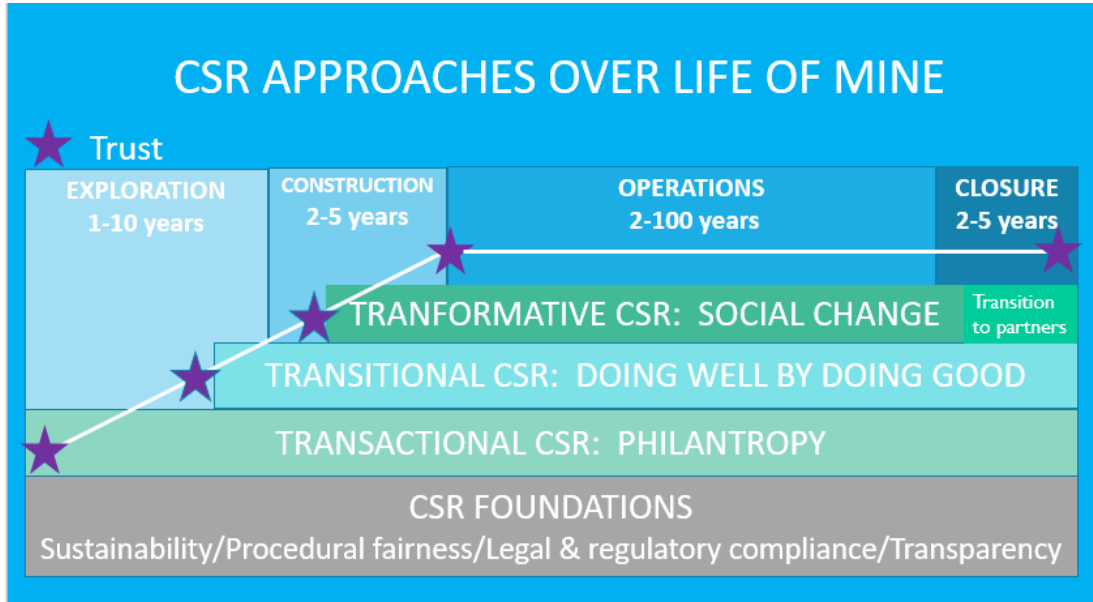


Figure 6.1 A proposed model of CSR implementation tied to stages of mine development designed to build trust (indicated by the star icon). It is noted that the ratio of activities will be variable over the life of mine.

6.3 Reducing Mining-Community Conflict through more Effective Social Responsibility

Programs

When Porter and Kramer (2011) proposed CSV, they suggested it should supersede CSR, allowing companies to move beyond doing good to building joint company and community value creation. They positioned CSV as a business strategy integral to a company’s profitability and competitive position. The 2014 publication, *Extracting with Purpose*, illustrates ways in which mining companies have explored CSV initiatives. It also promoted a question considered in this research: could a program built upon CSV reduce mining-community conflict? The conclusion drawn is that as a stand-alone initiative, creating shared value is not sufficient to reduce mining-community conflict, and its implementation could be impeded by low public

trust in the mining sector. However, when used to complement philanthropy and performance optimization, CSV adds four key benefits to the CSR portfolio.

1. As CSV is an economic approach, tied to the bottom line, there are systems in place to measure and monetize success. This addresses a fundamental challenge with traditional CSR approaches where efforts to monetize issues that do not have financial equivalencies have been challenging, and where questions remain about the ability to prove a business case for CSR.
2. The CSV approach can be embedded enterprise-wide, rather than being owned by a single department, yet it can be directed by individual business units. Within mining companies, where different sites can operate with a high degree of autonomy, this approach empowers local teams to work with local communities to identify areas for collaboration.
3. During downturns in the commodity cycle, when traditional CSR programs tend to face staff and budget cuts, generating new economic value from CSV initiatives will likely resonate at the executive and board of directors' level. This should serve to protect the corporate CSR investment to secure the CSV return.
4. And, because communities will see direct benefit on issues they identify as important, this approach may serve to mitigate social risk.

The challenge with CSV is that identification of the opportunity and structuring the collaborative partnerships needed for implementation takes two things mining companies frequently lack: trust and a long-term timeframe. For these reasons, it is suggested that CSV will be more easily achieved if it is preceded by traditional CSR tactics, that are familiar to both companies and communities, and that serve to build trust.

One of the “greatest impediments to [the]promise of social and economic progress is internal barriers that prevent companies from taking action” (Kramer & Pfister, 2016, p. 89). These barriers are exemplified by operations personnel with limited understanding of social engagement priorities and no financial incentive for meeting social performance targets, and by social performance personnel who fail to incorporate business drivers to social programs. Both groups report performance separately, using siloed teams, and different approaches for measuring costs and benefits. It is suggested that assembling an integrated team to address social issues will result in stronger internal alignment and create synergy across business lines. This alignment should then enable more effective social risk management and support the identification of opportunities for company-community collaboration to create value (Figure 6.2). To be successful, mining companies will need to understand how communities see – and define – value. This insight can only be achieved through consultation and engagement with communities of interest. The resulting multiplicity of perspectives enables the group to identify and assess opportunities to create shared value.

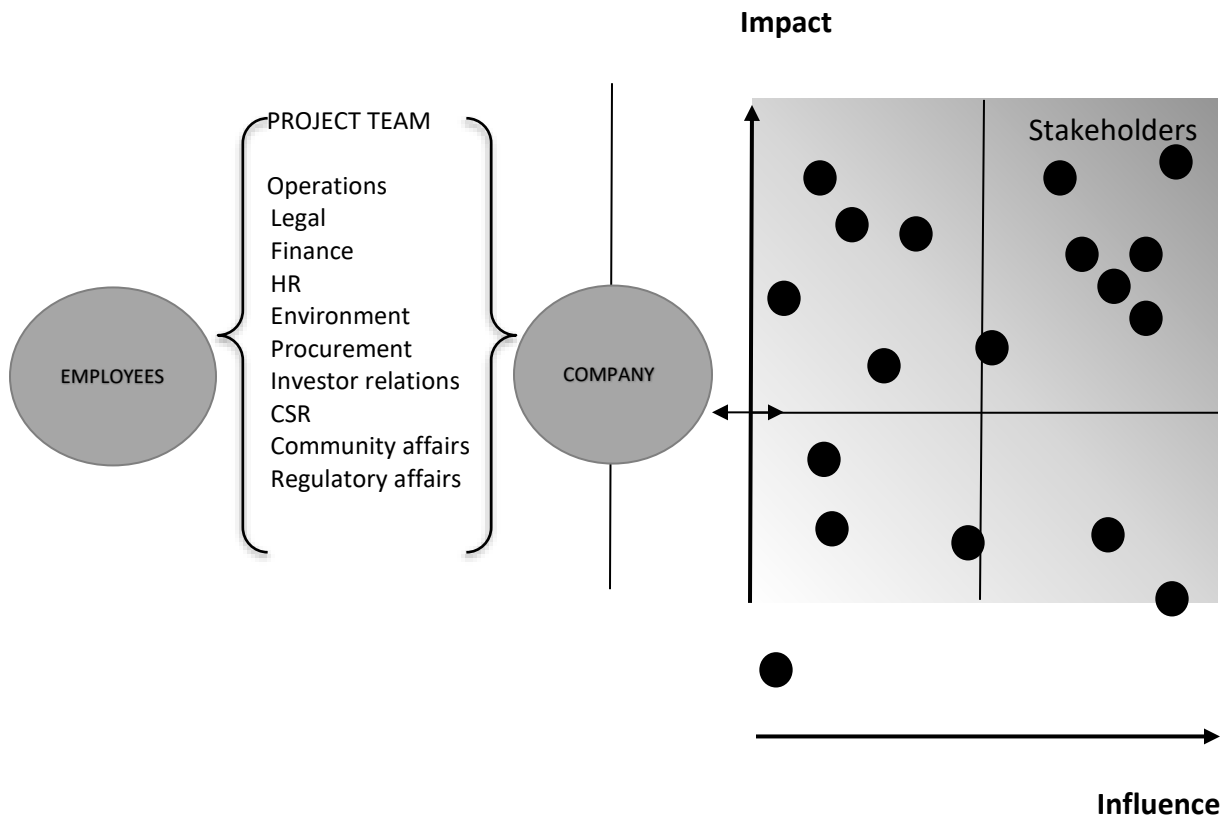


Figure 6.2 Organizational structure for transformative CSR. An integrated team creates stronger internal alignment and supports more effective risk management. It also supports the project team in its efforts to engage with stakeholders to identify opportunities for collaboration and pre-empt social risks. The diagram uses a common stakeholder map (on the right) to plot interested parties according to impact and influence. The interface between company and community is adapted from Globescan 'Stronger internal alignment allows for better management of risks and opportunities' Available at: http://www.globescan.com/images/webinars/GlobeScan_Webinar_Viewpoints_for_Business_in_2015_Jan2015.pdf

Once companies have established integrated teams, members can work together to build a solid business case for social and environmental performance. The resulting interdisciplinary approach to set measurable objectives for social responsibility becomes a critical component in the company's ongoing strategy to optimize performance, reduce risk, and report, in financial terms, the ways in which social engagement can generate savings, capture value, or add value.

Proving the connection between financial performance and performance on social issues has been problematic for business. Transformative CSR, specifically creating shared value, addresses this issue by creating new streams of economic value. This approach to

reframing CSR as a business strategy has parallel goals: improving business performance while delivering tangible social benefits. Key objectives for mining companies are to build more positive relationships with communities that host operations, reduce conflict, and increase the probability that projects can earn the approval required to build and operate facilities that impact society and the environment. The more closely tied a social issue is to a company's business, the greater the opportunity to drive change. The result is the proverbial win-win: improving business performance while delivering tangible social benefits.

The idea of combining care and compassion for mining communities with sound commercial imperative is not a new one. As we have seen, Cadbury embraced the idea in the industrial age in Britain. More recently, DeBeers used it to build a business case to combat HIV/AIDS. As noted earlier, management strategy is unique to each organization. This suggests there is no best practice template. Yet there are lessons to be learned from practice and questions for the project team to ask as the CSR approach is designed. These questions include:

- How can the project team contribute to maintaining a competitive return on investment and maximizing earnings by reducing non-technical risk?
- How can intra-company expertise be best accessed and applied? Departments with specialized expertise can be found in human resources (to support safety goals, programs and reporting, training and coaching, and to secure employee input to business and CSR practices); finance (to build the business case and measure outcomes beyond only money spent); procurement (to identify opportunities for local suppliers and within the entire supply chain); engineering (to design performance optimization measures and opportunities for shared infrastructure); government relations (to

facilitate partnerships with host governments and gain insight to regional sustainability priorities), environment (to support conservation and protection goals, programs and reporting) etc.

- How can the project team contribute to regional sustainability and work with communities of interest, and other stakeholders, to earn a reputation as a valued partner?

Planning can then move through a series of stages. At each stage, frequent, structured communication and follow-through on commitments are required to build trust. As projects are planned, care must be taken to reduce tension between short-term planning and operations deadlines, and long-term engagement and sustainable development deadlines. Results on projects that address the SDGs are unlikely to be achieved in the short-term quarterly reports favoured by shareholders. This means expectations – both within communities of interest and of corporate stakeholders – will also have to be managed. Another challenge that must be considered is how to manage changes in the social chain of custody so that trust equity is not lost as people, or companies, transition.

Planning transformative CSR strategies cannot be done using a best practice template. Each company will need to develop its own, proprietary approach to its business strategy. An acknowledged challenge with the “creating shared value” approach is that it is difficult to replicate success, even within the same company. This is due in part to the heterogeneous nature of communities and project stakeholders. However, at each stage of the planning process for transformative CSR strategies there are some common questions and issues for consideration.

1. Project analysis.
 - a. Review project plans to consider the following questions: Who is affected by the project? How will the project impact host communities? Which impacts can be mitigated? What options for change exist? What issues are relevant to both the host community and to the business? Which SDGs map to these issues? What resources and partnerships are required for successful project execution?
 - b. Review how employees are engaged with CSR. Embed CSR within each employees' job description – not just those with CSR, community relations or public relations in their titles. Create KPIs that are linked to compensation to motivate employees to view social responsibility as seriously as other performance requirements. Consider what performance incentives will support workforce engagement in SDG projects.
2. Seek to understand the underlying social conditions and key development needs in host communities.
 - a. Identify primary stakeholders and then ask those groups/individuals to help identify others from their networks who might have a valuable perspective to contribute to the sustainability conversation.
 - b. Invest to bring stakeholders together. The local community affected by the social condition, or development need, must be included and empowered in the strategy to address the issue.
 - c. With stakeholders, explore the underlying causes of relevant issues, agree to a common agenda, anchored to one the 17 SDGs, and identify prospective partners with skills to address the project's needs.

- d. Develop a brief list of indicators for measuring and reporting progress agreed to by all partners. Prepare a baseline to measure the project's socio-economic impacts.
- e. Develop a business plan that addresses social issues and key development needs, and test assumptions.

3. Execution

- a. Establish clear accountabilities for each partner (mining company, NGO, government, educators, economic development agency, other industry, etc.) focussing on what each entity can do best. For example, mining personnel may be best positioned to address technical aspects of the project while NGO partners may be better positioned to design the communications and engagement strategy.

4. Measurement and reporting

- a. When designing reporting, the objective is to develop a balanced report that reflects the relationship between sustainability and strategy, identifying and describing solutions to tensions, and creating comparability by measuring positive and negative trends in performance on a year-to-year basis.

Resources to support the planning process are summarized in Table 6.1

ACTION	Resources
Planning to address the SDGs:	WEF Atlas ICMM SDGs Sustainable Development Solutions Network Business and Sustainable Development Commission
Creating shared value	Extracting with Purpose report Shared Value Initiative website
Stakeholder mapping and community research/engagement	International Association of Public Participation Towards Sustainable Mining ICMM FPIC Social Progress Initiative
Materiality analysis	IIRC GRI – G4 or G5 (mining sector guidance) Accountability AA1000
Transparency	EITI PWYP
Embed sustainability to business strategy/practice	CSV
Participatory monitoring/CAP/CSC	IAP2
Measurement: value versus spend	Sustainability Accounting Standards Board (SASB) – work in progress International Integrated Reporting Council (IIRC) – work in progress IFC Valuation Tool PWC Total Impact Measurement and Management
BOD committee focused on SDGs	WEF Atlas ICMM

Table 6.1 Resources to support transformative CSR planning

6.4 Research Contribution

The purpose of this PhD research was to consider a central paradox in mining: although the availability and use of tools to support social responsibility is on the rise, incidents of mining-community conflict are also increasing. The research investigated whether the mining sector can transform social responsibility by moving from transactional engagement to a more strategic, or purposeful, approach focussed on the UN Sustainable Development Goals. The research proposition is that by taking a more strategic approach to CSR, companies could facilitate the use of resource wealth to support long-term sustainable development. Further,

that if companies could foster collaboration on topics of mutual interest and deliver projects that have value for society, the outcome might be a decline in mining-community conflict. The Cerro Verde case offers an analysis of one project that successfully expanded operations after a business decision was made that incorporated community feedback. Although initiated before the official announcement of the 2030 SDGs, the Arequipa wastewater treatment plant advances SDG#6. The transformative approach undertaken by Cerro Verde illustrates the positive outcome that can be achieved when sustainability is a central consideration in business decision making, and when the project addresses a problem shared by mining and society.

Mining-community conflict has been investigated by others but never using media coverage as the primary data source. In addition, the use of an established scale for measuring conflict and cooperation differentiates this work from previous research into mining-community conflict. The research premise is that if mining companies realigned their CSR initiatives to better reflect the values of society there would be an opportunity to build trust and reduce conflict. To translate the ambitious agenda of the SDGs into actionable plans requires collaboration, which builds trust. It is suggested that CSV offers a strategy to advance the SDGs while delivering business and social value. The importance of transactional and transformative CSR is acknowledged, and a model offered to guide mining companies' planning at the various stages of LOM.

6.5 Limitations

The media analysis reported upon in Chapter Three is limited by several factors. The first is the time frame of this study, which covers only four years. This brief period extends research conducted by the ICMC, and serves to frame the research around two sustainability

milestones: the Rio +20 Conference in 2012, where work on the 2030 SDGs was initiated, and the 2015 launch of the SDGs. However, the cyclical nature of the mining industry raises questions about whether any trends can be generalized from the study time frame. The media analysis sought to quantify the number of incidents, and then to cluster causes. It is possible that conflict is being reported more frequently than it was previously, or that it is resulting from the exposure of new areas to mining: neither hypothesis was tested in this research. A more systematic investigation into drivers of conflict would extend the merits of the study. The hypothesis that reductions to CSR budgets are correlated to increasing conflict was tested on a very small sample. This is both a limitation and an area for future research.

The comparative analysis of the Tía María and Cerro Verde projects would be strengthened by conducting one-to-one interviews with Tía María proponents and stakeholders. While the two projects have many points of similarity, the fact that no qualitative work was done when examining Tía María limits the ability to do a robust comparison of the two cases. In addition, although saturation seemed to be achieved in the Cerro Verde interviews, the small sample size limits the findings. Elected municipal leaders were not included in the sample for the Cerro Verde interviews. One-to-one interviews with mayors of 32 municipalities within Arequipa would enrich the findings and would likely illustrate the complexity of perspectives presented during the consultation and negotiation process for the wastewater treatment plant.

While the SDGs offer the potential for a common agenda to address the “grand challenges” that affect both mining companies and communities there is no guarantee that either companies or communities will wish to embrace a new model of engagement, where a

SDG is at the centre of discussions. Many community representatives and government officials may resist company engagement on these topics and may not be willing to see the mining company as a collaborative partner. Companies may also resist the model, concerned that engaging on SDGS issues could create the perception that the company will pay to fix systemic social issues. It is acknowledged that trust will be an issue and that breaking the short-term focus of both communities and company shareholders will constitute another obstacle to overcome. Very little academic research has been done to date to measure progress on the SDG agenda. This limits the ability to do a critical assessment but also creates opportunities for future research.

6.6 Future Research

Traditionally, mining projects have been the focus of consultation initiatives. The proposal that the SDGs could become the focus needs further investigation. Companies rarely step up to address the types of social problems embodied by the SDGs. And the efforts of those that do are subjected to scrutiny: the industry's low trust levels mean mining companies lack the legitimacy to execute projects for social good versus pure profit. Future research is required to determine the willingness of governments and NGOs to accept corporate leadership on the SDGs. In some jurisdictions, even the willingness of governments and NGOs to enter discussions with mining companies on the SDGs merits investigation.

Changes in the social chain of custody are a common occurrence in the mining industry where one company may discover a deposit that becomes a project built by another company, operated by a third, and then sometimes changing ownership several times due to corporate mergers and acquisitions. It is standard practice to transfer assets in mergers and acquisitions

to new owners, but this work has raised the question of whether trust can be measured and transferred. Does goodwill have value on the corporate balance sheet? Can trust be amortized? It has been suggested that trust may constitute its own risk category. More research is needed to investigate this conceptual idea. Another complementary area meriting additional research is the impact of social chain of custody changes and how trust levels are affected. It would be interesting to know how many companies have social chain of custody plans and to examine existing plans to explore best practices.

The dynamics of head office and mine site decision making on sustainability issues merits further research. Should the SDGs be established as a focus of mining-community co-operation, research will be required to determine policies and procedures for transitioning projects to non-mining partnerships as mine closure looms.

The Business and Sustainable Development Commission (2017) has suggested “achieving the [SDGs] opens up US\$12 trillion of market opportunities in the four economic systems examined [food and agriculture, cities, energy and materials, and health and well-being] by the Commission” (p. 12). Work to measure value creation related to the SDGs is another area for future research. The Cerro Verde case is a retrospective look at a decision made by a mining company that can be considered within the frame of SDG#6, access to clean water and sanitation. Following a project from the inception of the sustainable/shared value idea, through the identification of project partners and performance indicators, building the business plan, executing the strategy, and assessing results upon completion would constitute another interesting future research initiative.

6.7 Conclusions

Three hypotheses were tested in this research.

1. Increasing incidents of mining-community conflict are resulting from a failure on the part of mining companies to meet community expectations for sustainable outcomes.
2. Traditional corporate social responsibility programs, grounded in philanthropy and other forms of transactional stakeholder engagement, contribute to trust building but are not effective at reducing mining-community conflict.
3. It is possible to find “win-win” solutions by augmenting standard philanthropic and performance optimization measures with CSR policies and practices that resolve problems shared by both company and community.

While acknowledging the limitations of the research, the findings appear to support each hypothesis. It was argued that CSR in the mining sector should encompass sustainability, as it is an area of mutual interest for companies, communities, regulatory agencies, governments, indigenous peoples, and other interested parties. To that end, the UN 2030 Sustainable Development Goals appear to offer mining companies an opportunity to reframe current approaches to CSR to increase the focus on activities that benefit both business and society.

Mining provides a valuable service to society but the sector has suffered in recent years. From technical challenges arising from developing lower grade projects in remote or under-developed areas; from financial constraints due to fluctuating commodity prices and rising capital costs; from poor environmental performance; and, from increasing incidents of mining-community conflict. It must also be noted that this research did not investigate egregious conflicts caused by irresponsible – and sometimes criminal – activity on the part of

mining companies. There are well-documented and authenticated cases where mining companies have been responsible for situations of environmental degradation, human rights abuses, and a failure to respect the law. This is not to suggest every company behaves inappropriately. This research is directed towards companies that have an interest in acting in more socially responsible ways and that recognize the legitimate right of citizens to have a voice in decisions that impact their communities.

In the mid-1960s, sociologist Marshal McLuhan observed that he was living in the age of “instant information.” He coined the term before the advent of the internet and the associated hyper-connectivity of global citizens, where news – especially unwelcome news – travels quickly regardless of geographic boundaries. Despite tools to support social responsibility, and despite efforts to improve social performance by some companies, mining continues to suffer from a poor reputation and low trust levels. This suggests dissatisfaction with current approaches to social responsibility. The UN 2030 Sustainable Development Goals appear to offer the mining industry an opportunity to realign industry interests with those of society. The SDGs are ambitious and there is no prescribed strategy for their achievement. “Creating shared value” is one option for mining companies seeking a process for advancing the SDGs. It has been suggested that when businesses pursue the SDGs in partnership with government and civil society the result will be greater, more widely shared prosperity. As the Business and Sustainable Development Commission has noted, the result could be both better business and a better world.

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Appendices

Appendix A Factiva Media Analysis Mining-Community Conflict 2012-2015

Causes colour coded

Excluded*	Unspecified	Water	Environment	Land Use	Beneficiation	Labour
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*Resource nationalism, non-mining related conflict, situations coded as non-serious conflict.

- Conflicts are grouped to categories scoring minus 5 to minus 7; most egregious conflicts scored minus 8 to -10. Categories modelled after Goldstein scale (+10 cooperation -10 severe conflict)

A.1 Quantitative Analysis

Year	Country	Company	Mine	Commodity	Issue	Cause	Score -5to -7 -8 to -10
2012	Argentina	Xstrata, Goldcorp, Yamana	Alumbrera	Ag, Cu, Au, Mo	Road blocks 4500 protesters	Enviro - H2O land use conflict w farming	
2012	Argentina	Xstrata	Agua Rica	Cu	Road blocks		
2012	Argentina	Osisko	Famatina	Au	Exploration project - protests led to project cancellation	Enviro - H2O land use conflict w farming	
2012	Australia	Lynas Corp	Mt Weld plant	U	Public protests fear of radiation	Risk radiation	
2012	Canada	God's Lake Resources	Sherman Lake site	Au	FN protests - refusal to grant access to land. Protest at Premier's & PDAC	Lack consultation	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2012	Chile	Goldcorp	El Morro	Au	Lack of consultation, project suspended, protests, court suspension	Lack consultation	
2012	Colombia	Eco Oro Minerals	Angostura	Au	Protests, potentially severe and irreversible enviro & social impacts	Deposit located in environmentally sensitive area, risk to water supply	
2012	Dominican Rep	Barrick	Pueblo Viejo	Au	Violent protests at mine, fire set, 20 protesters injured	Demands for local spending and jobs for residents. Rafael Guillen Beltre, leader of the Paz Dominicana organizations, said thousands of families that live in Sanchez Ramnez province and other parts of the country re victims of a "silent genocide" perpetrated by mining companies	
2012	Dominican Rep	Glencore Xstrata LON: GLEN	Loma Miranda/Falcondo	Ni	Environmental activists protesting nickel mine	Land use - water. Peaceful protest - remove	
2012	DRC	First Quantum	Kolwezi and Frontier	Cu & Co	Resource nationalism	Resource nationalism - remove	
2012	Ecuador	Cornerstone Capital Resources	Cascabel	Cu & Au	Series of local protests	Land use - H2O indigenous opposition -- remove no news coverage	
2012	Guatemala	Goldcorp	Marlin	Au	HR abuses and enviro - continuation of long running conflict	Failure to benefit	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5 to -7 -8 to -10
2012	Guinea	Vale SA	Zogota	Iron ore	Attack by local villagers - extensive damage	Failure to benefit (jobs) + environment	
2012	India	Vedanta Resources	Odisha Niyamgiri Hill	Bauxite	"One of world's most controversial mines" bauxite HR issues	Land use - resettlement/values	
2012	India	Eastern India Coalfields Ltd	Raniganj coalfield	Coal	Land use conflict, resettlement, protests "crisis"	Land use - resettlement	
2012	Indonesia	Freeport-McMoRan	Grasberg	Au & Cu	Labour strife - subsequent to 3 mo. strike in 2011, continues in 2014	Labour issues - remove	
2012	Malaysia	Peninsula Gold	Bukit Koman	AU	1000s demonstrate in Raub following years of local protest	Environmental issues - use of cyanide	
2012	Mexico	Fortuna Silver Mines	?	Ag	Opponent killed, water, land use	Land use - resource competition	
2012	Mexico	Excellona	La Platosa	Au	2 mo. long protest/blockade halted operations	Land use/contracts HR	
2012	Mongolia	Rio Tinto	Oyo Togoi	Cu Au	Protests at AGM- water, community issues	Beneficiation	
2012	Mozambique	Vale SA	Moatize	Coal	Resettlement, commitments not fulfilled, protests, blockade	Land use and beneficiation	
2012	Mozambique	Rio Tinto	Benga	Coal	Protests – resettlement	Land use - resettlement	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2012	Nicaragua	B2Gold	El Limon	Au	Protests following death of local woman whose house was destroyed when a portion of the mine collapsed	ASM want millions of dollars in compensation from company to account for the potential loss of their livelihoods	
2012	Panama	Inmet (First Quantum?)	Cobre Panama	Cu	Protests, teenager killed, widespread dissent from CSO and FN groups	Land use - health impacts	
2012	Paraguay	Latin American Minerals	Independencia Mine	Au	Violent protests cause cancellation of inaugural event		
2012	Peru	Newmont	Conga	Au	Int'l HR groups criticized Peru's government - live ammunition kills 5 in anti-Conga protests	Land use - H2O indigenous opposition	
2012	Peru	Xstrata	Tintaya	Cu	Community protests, enviro concerns, lack of benefits. 30-day state of emergency declared - 2 dozen dead, police injured	Beneficiation. Plus, environmental study commissioned by the local Roman Catholic Church found elevated levels of arsenic, copper, mercury and other heavy metals in soil and water samples.	
2012	Peru	Barrick	Pierina	Au	Ops stopped 1 day due to protests re water supply issues. One dead.	Land use - comp resources	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5 to -7 -8 to -10
2012	Peru	Anglo American	Quellaveco	Cu	Community opposition overcome but predicted to re-occur	Land use - H2O indigenous opposition	
2012	Peru	Southern Copper	Tia Maria	Cu	Strikes. Violent protests, blockades, media campaign: project stopped	Land use - H2O indigenous opposition	
2012	Peru	Bear Creek Mining	Santa Anna	Ag	? Violent protests in 2011 halted construction, issues remain '12 '13	Land use - H2O indigenous opposition	
2012	Peru	Hochschild	Ares	Au & Ag	Protests		
2012	Peru	Compañía de Minas Buenaventura/Newmont	La Zanja	Au	Protests, mass mobilization, violence, arrests re-occurred in 2012	Land use - H2O indigenous opposition	
2012	Peru	Newmont, Minas Buenaventura	Yanacocha	Au	Violence, mass protests, arrests, deaths: enviro issues, land "grab"	Land use- H2O indigenous opposition	
2012	Peru	HudBay Minerals	Constanica	Cu	Protests, environment	Land use - enviro	
2012	S Africa	Anglo American	Rustenburg	Pt	Labour strife - wildcat strikes. Protest expands to farms	Labour issues	
2012	S Africa	Gold Fields	KDC Mine	Au	Labour unrest, protests, shut down	Labour issues	
2012	S Africa	Gold One International	Modder East	Au	Labour unrest - 4 protestors shot and hospitalized	Labour issues	
2012	S Africa	Xstrata	Rustenburg	Pt	Labour unrest protests	Labour issues	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2012	South Africa	Aquarius Platinum	Kroondal	Pt	Labour unrest protests - ops suspended 3 days	Labour issues	
2012	South Africa	Lonmin	Marikana	Pt	Labour unrest - outbreak of violence shuts down three mines.	Labour issues	
2012	South Africa	Anglo Gold Ashanti	Kopanang	AU	Labour unrest, strike	Labour issues	
2012	South Africa	Impala Platinum		Pt	Clash between rivals left 3 dead closed mine for 6 weeks	Labour issues	
2012	USA	Arch Coal	Otter Creek	Coal	Week long occupation Capital Hill office - protest	Preservation of historic site	
2013	Australia	Glencore Xstrata LON: GLEN	Collinsville	Coal	Distrust, labour unrest. Militancy	Labour issue - lay offs	
2013	Australia	Venture Minerals	Mines near Tullah	Coal	Environmental protests - appear to have been peaceful	Land use - environment	
2013	Australia	Hancock Prospecting	Galilee Basin	Coal	Protests by anti-coal activists - appears to be share vote	Social issue - coal use	
2013	Bosnia	RMU Djurdjevik	coal mine	Coal	Workers barricade themselves u/ground - wage protest	Labour issues	
2013	Brazil	Vale	Carajas	Iron ore	Iron ore shipments stalled in rail blockade social unrest not uncommon	Beneficiation	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5 to -7 -8 to -10
2013	Canada	Taseko	New Prosperity	Au & Cu	FN issues/enviro opposition/permit denial/protests	Land use - consultation	
2013	Canada	DeBeers	Victor	Diamond	Blockade at Victor mine (2 in one week) Feb	First Nation concerns	
2013	Canada	Coal Valley Resources	Obed Mountain Mine	Coal	Spill, community impacts, pollution, violation national leg	Land use - enviro	
2013	Canada	HudBay	Lalor Lake	Au & Cu	Idle No More blockades disrupt production. Injunction. Lack of IBA/consultation.	Lack consultation	
2013	Canada				130 protests across the country	Climate action	
2013	Chile	Goldcorp	Andina	Au	Fierce opposition to company's expansion plan	Environment - impact on glaciers, drinking water	
2013	Chile	Barrick	Pascua Lama	Au	Protests by indigenous communities	Threats to water supply	
2013	Colombia	BHP Billiton	Cerro Matoso	Ni	~50 protesters occupy mine site - 1000s demonstrate outside. Resettlement	Land use - resettlement	

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2013	Colombia	Xstrata, BHP & Anglo American	Cerrejón	Coal	Resource cruse - failure of benefits to trickle down	Failure to benefit	
2013	Colombia	Anglo Gold Ashanti	La Colosa	Au	Local community vote to halt project, controversial, protests, death of activist	Land use - conflict with agriculture.	
2013	Colombia	Drummond	mine		Protests shut down production July - September	Labour issues	
2013	Costa Rica	Infinito Gold Ltd. (TSX.V: IG)	Las Crucitas	Au	Lawsuit over concession -	Cancel permit due to environmental concerns but no community protests	
2013	Ecuador	Enami/Codelco	Junin	Cu	Violation of community rights, protests and prediction of continued opposition	Consultation	
2013	Greece	Eldorado Gold/Hellas Gold	Hellas	Au	3000 protestors/enviro concerns; property damage, violence	Land use - environ	
2013	Greece	Eldorado Gold	Skious	Au	Protestors, property damage, violence, police station attacked	Land use - cultural value - beneficiation	
2013	Greece	Eldorado Gold	Perama Hill	Au	Thousands demonstrate	Land use - cultural value - beneficiation	
2013	Greece	Eldorado Gold	Halkidiki	Au	Violent attack	Land use - cultural value - beneficiation	
2013	Guatemala	Tahoe Resources' (TSX: THO)	Escobal	Ag	Violent protests, death, roadblocks over multiple months	water, environment and human health	

Year	Country	Company	Mine	Commodity	Issue	Cause(s)	Score -5to -7 -8 to -10
2013	Guatemala	Cassidy & Associates	El Tambor	Au	Violent clashes injure dozens	Development of El Tambor has been disrupted by ongoing protests since early 2102. Opponents argue that the project's development will shorten already limited supplies of water and believe there was no appropriate consultation process before granting Canada's Radius Gold and its partners KCA their license	
2013	India	Vedanta Resources	Odisha Niyamgiri Hill	Bauxite	Court ruling against mine development HR issues	Human rights	
2013	India	Adani Group	Mahaguj	Coal	Villagers held massive protests	Land use cultural values	
2013	Kyrgyzstan	Centerra Gold TSX:CG	Kumtor	Au	2000 protestors storm mine/road block/bus with security forces set on fire	Beneficiation	
2013	Australia	Lynas Corp	Mt Weld plant	rare earth	Public protests, AGM protest and social media campaign	Land use - environ	
2013	Mexico	Minera Frisco	San Francisco del Oro	Au	Labour unrest - outbreak of violence shuts down three mines.	Labour issues	

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2013	Mexico	Excellon Resources	La Platosa	Ag	Protest camp. AGM protest, HR	Human rights	
2013	Mexico	Ternium	Aquila	Coal	Violent protests	Conflict with indigenous community	
2013	Mozambique	Vale SA	Moatize	Coal	Protests disrupt operations - reoccurs over two months	Seeking compensation for resettlement 5 years earlier	
2013	Mozambique	Rio Tinto	coal area	Coal	Violent protests - resettlement, tribal Queen opposed. RR closed	Land use - resettlement	
2013	Myanmar	Wanbao Mining	Letpadaung	Cu	Local opposition, international attention. Police dispersed protesters, injuring more than 100 Buddhist monks.	-	
2013	Namibia	Paladin Energy Ltd	Langer Heinrich	U	Labour dispute/peaceful protests	Labour issues	
2013	Nicaragua	B2Gold	La Libertad	Au	ASM protest (100s) rubber bullets fired/tear gas used		
2013	Niger	Areva	Cominak	U	Strike and conflict	Labour issues and land use	
2013	Peru	Xstrata	Tintaya	Cu	Authorities attempt to moderate company community conflict		
2013	Peru	Rio Alto	La Arena	Au	Blockade of main road to protest country's judicial system		

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2013	Peru	Candente Copper Corp.	Canariaco	Cu	Blockade with injuries	Land use - environmental. Local authorities claim community rejected the mine in a referendum. Water	
2013	Peru	Barrick	Lagunas Norte	Au	200 set up blockade 6 days - production unaffected	Labour and social issues	
2013	Peru				Conflict reports avail: 2013 # down from 2012		
2013	Peru	Newmont	Conga	Au	New protests (June)	Water. Construction at the debated mine, in partnerships with Buenaventura and Minera Yanacocha, has been suspended for over a year following violent protests and blockades. State of emergency declared more than once	
2013	Peru	Chinalco	Toromocho	Cu	Resettlement 5000 protests (demolish century old village)	Land use - resettlement	
2013	Romania	Gabriel Resources	Rosia Montana	Au	1000s protest 5 days - enviro issues. Social media used widely. Project remains delayed 2017	Land use - beneficiation	
2013	S Africa	Glencore Xstrata LON: GLEN	3 chrome mines	Chrome	Labour strife - closed ops - 1000 fired	Labour issues	
2013	Suriname	IAMGOLD	Rosebel	Au	Violent unrest, conflict with illegal miners		

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2013	Tibet	China National Gold Group Corp	Gyama Polymetallic	Cu & Au	Resettlement, relocation, protests, toxic discharge to river, safety	Land use - resettlement/environmental	
2013	Uruguay	Valentine	iron ore project	Iron ore	About 2000 people including environmentalists and horse-riding farmers rallied downtown in Montevideo to protest three large scale mining projects expected to begin before year end	Beneficiation - extraction by foreign companies	
2013	USA	Anglo American	Pebble	Cu, Au & Mo	Company withdraws - years of protests		
2013	USA	Resolution Copper (Rio & BHP)	Superior	Cu	Critics including Sierra Club mine devastating impacts, land exchange, block cave	Land use -	
2014	Australia	Whitehaven Coal	Maules Creek	Coal	protests continue	Anti-coal climate change	
2014	Australia	Adani Group	Carimichael	Coal	Vociferous protests from locals enviro concerns World Heritage site	Land use - environmental. Water	
2014	Australia	GVK Hancock	Alpha Mine	Coal	Environmental protest, financing denied; Great Barrier reef and climate change	Adverse impact to Great Barrier Reef	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2014	Brazil	Belo Sun Mining Corp		Au	Local opposition: lack of local employment opportunity, enviro, ASM,	Beneficiation/FPIC	
2014	Canada	Imperial Metals	Mount Polley	Cu & Au	Protests following TSF collapse	Land use - environmental	
2014	Canada	Imperial Metals	Red Chris	Cu	Protests/blockade mine development	Land use - consultation - environment	
2014	Canada	Iron Ore Co of Canada (Rio)	mine name? Quebec	iron ore	2 Que Innu communities court case for C\$900 m compensation		
2014	Canada	Taseko	New Prosperity	Cu & Au	FN issues/enviro opposition/permit denial	Land use - consultation	
2014	Canada	Cliffs Natural Resources		Chromite	FN land access/lack of consultation/blockade	Land use - consultation	
2014	Chile	Anglo American	Los Broncos	Cu	Contract worker protest - anti-union practices	Labour issues	
2014	Chile	Codelco	Andina	CU	Opposition to expansion cont'd	Environment: "fierce opposition from environmentalists and local government officials. They claim Andina's expansion will pollute and destroy dozens of glaciers in the area, wreaking havoc on drinking water reservoirs that serve the Chile's central regions."	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score
							-5to -7
							8 to -10
2014	Dominican Rep	Glencore Xstrata LON: GLEN	Loma Miranda	Ni	Protests police presence		
2014	DRC	Anglo Gold Ashanti RandGold	Kibali	Au	Terrorism, extortion, protests, labour disputes	Labour issues	
2014	Ghana	Anglo Gold Ashanti	Obuasi	Au	vigilante group attacks ASM attempting to access concession	Land use	
2014	Guatemala	Kappes, Cassiday & Associates	El Tambor	Au	Blockade since 2012 turned violent 05/2014 with 26 injured including police		
2014	India	Rio Tinto	Bunder diamond project	Diamond	Hundreds of villagers protest - environ, tribal impacts	Land use - environmental and cultural values	
2014	India	Coal India	Talcher coalfields	Coal	Land use conflict, resettlement, protests, production & job losses	Land use - resettlement	
2014	India	Vedanta Resources	global		AGM protest with protests at sites	Land use - resettlement cultural values	
2014	Indonesia	Freeport-McMoRan	Grasberg	Au & Cu	Labour strife protests and strikes impacting ops in pit	Labour issues	
2014	Kazakhstan	Altyn Kumushtak Mining	Shyralzhyn	Au	On-going protests, blockade of motorway, 20 police injured in clash		
2014	Kyrgyzstan	Centerra	Kumor	Au	Resource nationalism leads to protests		

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2014	Mauritania	Kinross	Tasiast	Au	Protests and violence following lay offs police clash		
2014	Mexico	Goldcorp	Los Filos	Au	Land use contract, suit, blockade. Ops suspended due to failure to renew community agreement	Land use: long term environmental and health costs	
2014	Mongolia	Rio Tinto	Oyu Tolgoi	Cu & Au	Protests by labour unions to reinforce environmental, community and indigenous opposition		
2014	Myanmar	Wanbao Mining	Letpadaung	CU	Woman killed +20 injured clashes with police as construction set to resume	lack of transparency, land use, environmental impact t farm land. Amnesty International report	
2014	Myanmar	Mayflower Mining	Ban Chang	Ni	Protests over lack of transparency, no EIA	Villagers told civil society groups that East Star had dumped tailings into steams, while the nearby water table had acidified and killed local marine life. Mining dust and reoccurring coal fires - which East Star attempted to extinguish by covering waste piles with dirt - have led to an increase in respiratory illnesses, and an outbreak of skin diseases.	
2014	Namibia	Namdeb			Strikes	Labour issues	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 8 to -10
2014	Panama	Minera Panama/First Quantum	Cobre Panama	Cu	Ops closed due to blockade and protest		
2014	Peru	Newmont	Conga	Cu & Au	Construction suspended +year due to blockade, violent protests.		
2014	Peru	Southern Copper	Tia Maria	Cu	500 protests 1 month after mine approval	Water/land use	
2014	Peru	212 social conflicts recorded			National conflict report available 2014		
2014	Peru	Newmont	Conga	Cu & Au	750 protestors enter site - kidnap, vandalism	Land use	
2014	Peru	Bear Creek	Santa Anna	Ag	Delayed due to social conflict	Land use	
2014	Peru	Rio Blanco Copper	Rio Blanco	Cu	Delayed due to social conflict	Land use	
2014	Peru	MMG	Las Bambas	Cu	Delayed due to social conflict	Land use	
2014	Peru	Anglo American	Michiquillay	Cu	Returned to gov'n't - copper price plus social conflict	Land	
2014	Sierra Leone	African Minerals	Tonkolili	Iron ore	Forced relocation from agricultural lands	Land use - resettlement	
2014	South Africa	47 cases - some will be duplicates			Mining forum convened by gov'n't to combat crime, violent protest		
2014	South Africa	Anglo American Platinum		Pt	3000 protestors, police fire water cannons and rubber bullets	Labour issues with wide spread violence	

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2014	Sweden	Beowulf Mining	Kallak	Iron ore	Angry demonstrations	Environment	
2014	Tanzania	African Barrick	North Mara	Au	Fatalities following clashes with locals, violence, HR abuses, pollution	Land use - environmental and HR	
2014	Tibet	Sangchu gold mining industry		Au	Hundreds protest confiscation farm land & pollution Chinese state backed mining	Land use - resettlement and environment	
2014	Turkey	Soma Komur Isletmeleri			Explosion killed 301. Led to protests allegations fraud, corruption, forced labour	Accident	
2014	Ukraine	Metinvest Holding	Krasnodonugol	Au	Several 100 protestors economic and political demands block admin bldg.	Consultation beneficiation	
2014	Zambia	Barrick & others			Resource nationalism leads to protests/royalty	Resource nationalism	
2015	Argentina	Barrick	Veladero	Au /B: 2005	Cyanide spill into water	Multiple protests to officials re water supply	
2015	Australia	Whitehaven Coal	Maules Creek Mine	Coal/ G: 2015	Dozens of traditional landowners protest; protesters stage tree sits	concerns that the mine will eliminate 4000 acres of "culturally significant forest, artefacts and cultural values" + concerns about water	
2015	Australia	Whitehaven Coal	Vickery	Coal / G	Protests	Climate change	
2015	Australia	Adani	Carmichael	Coal/ G: not started	Protests and legal action	Concern about Great Barrier Reef Skink lizard and ornamental snake	

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2015	Australia	Rio Tinto	Warkworth	Coal/ B : expansion not started	Environmental & land use protest	Expansion of coal mine	
2015	Australia	Toro Energy	Wiluna	U/ G (approved 04/2013)	Anti-uranium protest	Land use	
2015	Australia	Wollongong Coal	Russell Vale	Coal/ B : expansion (not started)	Expansion plan met with strong opposition from local community and conservation groups	Impacts to Sydney water catchment	
2015	Australia	Energy Resources Australia (JV Rio)	Ranger expansion	U/ B : expansion (not started)	Expansion cancelled after protests by anti-nuclear and conservation groups	Concerns about site clean up. Market demand for uranium not conducive to project post Fukushima	
2015	Bolivia				Mining exports fall 13per cent due to protests and falling metal prices		
2015	Bolivia	Coeur Mining	San Bartolomé	Ag / B : 2008	Stoppage at mine - road blocks and attacks on property (one month)	Political protest new mining laws	
2015	Brazil	Vale/BHP	Samarco	Iron ore/ B :	Tailing collapse	Protests - compensation, environmental damage, resettlement, etc.	
2015	Burkina Faso	TrueGold	Karma	Au / G : 2016	Operations halted because of demonstrations. Company says protests caused \$US6.1 m in damages	Cause unclear	

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2015	Canada	Imperial Metals	Mount Polley	Cu & Au / B: 1997	Alaska protests plus protests from Secwepemc Women Warriors Society at TSX, BC gov'n't offices and Cdn consulate offices in US	Transboundary water impacts from mining in BC - results in mining pact	
2015	Chile	Antofagasta	Antucoya	Cu / G: 2015 start	Environmental protests greenfield project	Water concerns	
2015	Chile	Antofagasta	Los Pelambres	CU / B: 2000	Lost about 8,000 metric tons of copper output due to a 10-day protest over water supplies at its flagship Los Pelambres mine in early March	Water	
2015	Chile	Codelco	Andina	Cu / B: expansion 2015	Protests led to mine redesign	Environmental impacts - glaciers/water	
2015	Czech Republic	Severoceske doly	Bilina	Coal / B: ~2011	Protests against resumption of coal mining/lifting of limits - target is gov'n't not individual company	20-year battle - environmental concerns	
2015	DR Congo	Banro	Namoya	Au / G: 2016	Protests	Resettlement	
2015	Ecuador	Ecuacorriente	Mirador	Cu / G: 2015	Protests by indigenous groups and environmentalists; indigenous leader killed	Fear operation will pollute local water supplies	

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2015	Finland	Karelian Diamonds	Lapland development	Diamonds / G :	Project abandoned following community protests	Locals wanted the activities of the company stopped on concerns that the development of the Utsjoki area would negatively affect the homeland of the indigenous Sami people. The area also hosts a protected nature reserve.	
2015	Germany	RWE	lignite mine	Lignite / B :	1200 police deployed to protect mine	Climate change	
2015	Greece	Eldorado Gold	Skouries	Au / G :	Greek police arrest protesters at company head office	Work suspended/tourism and environ	
2015	India	Gujarat Mineral Development Corporation		Coal/ G	Protests in Gujarat - 500,000 people	Land use	
2015	India	Mahanadi Coalfields Ltd	Hingula Mine	Coal / B : 1997	Protest by 100s of locals demanding jobs as compensation for land loss. Mine closed for 13 days	Hingula losing 10,000 tpd of coal production for 3 weeks	
2015	Kenya	Wanjala Mining Company	Kishushse	Iron ore / B : before 2012	Land rights dispute	This is the third time in two years that the same land dispute has disrupted the company's operations, the previous disruptions being in August 2013 and April 2015	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5 to -7 -8 to -10
2015	Kyrgyzstan	Centerra	Kumtor	Au / B : 1997	Government pulls out of talks with Centerra	Mine subject to violent protests calling for nationalization	
2015	Kyrgyzstan	Vostok-Geoldobycha	Jerooy	Au / G :	Protests	Cause not specified	
2015	Kazakhstan	Kaz Minerals	Bozymchak	CU / G : 2014	Close to 100 residents blocked road leading to the deposit	Cause not specified	
2015	Mexico	Ternium	Aquila	B : 2009	Mine shut down following "violent protests" by local community. (drug cartel involvement)	Conflict with indigenous community	
2015	Mexico	Desarrollos Zapal (owned by Invecture Group - affiliate Frontera Mining Grp Vancouver)	Los Cardones	G : TBD feasibility	Protests lead to permit being rejected	Development in biosphere area - impacts on drinking water	
2015	Mongolia		Monrostsevetmet	fluorspar and Au / B :	Local citizens protesting mine	Cause not specified	
2015	Myanmar	Wanbao Mining	Letpadaung	Cu / G : TBD	Amnesty International report	Continued community protests, forced relocation, pollution, health risks, crop damage, incomplete EIA	
2015	Myanmar		Coal mining in southern Burma's Tenasserim Division	Coal / B :	Residents say mining brought flooding that has killed off crops and contaminated local water supplies, with some villagers nonetheless forced to use the unpotable water in rivers and streams surrounding the mine		

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2015	New Zealand	New Talisman Gold	Karangahake Mountain	Au / G : TBD	Protests	Hundreds of people attending variety of protests - mining in fragile landscape	
2015	New Zealand	Glencoal	Kopako	Coal / G : Replacement	Protest delays open cast coal mine	? Climate change	
2015	Nicaragua	B2Gold	El Limon	Au / G : Exploration	Protesters block road for 3 days/protestors and police injured	Withdrawal of electricity subsidy	
2015	Nicaragua	Mineros SA/HEMCO	Bonanza	Au / B : 1995	5 days "violent protests" - one dead 10 injured. ASM demanded compensation. Company reported loss of \$US3 m	Demonstrators' complaints were principally financially focused and did not contain demands to cancel the project, a common feature of mining disputes elsewhere in the region. Given that such financial issues are generally much more easily resolved than addressing a community's outright rejection of a project	
2015	Norway	Nordic Mining ASA	Vevring rutile	G : TBD	Local protests	Protest started with salmon farmers worried about environmental pollution impacting business; spread - larger issue eco dev post oil - and protection of fjords	
2015	Papua New Guinea	Newcrest Mining	Lihir	Au / B : expansion 2013	Unplanned shut down at hands of angry locals	Lack of local benefits	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	
2015	Peru	MMG	Las Bambas	Cu / G : 2015	Sept - 4 fatalities, 16 injured. State of emergency declared Apurimac "violent protests"	Changes to environmental plans : decision to scrap a mineral slurry pipeline and build a molybdenum plant in Apurimac instead of in Cusco	
2015	Peru	Southern Copper	Tia Maria	Cu / G : TBD	Police sent to quell protest following death of protester and police officer	A new set new set of protests began in March and three people have died since, according to the BBC, including one person killed and 12 others seriously injured in April when police opened fire on a group of farmers protesting the \$1.4 billion Tia Maria copper project.	
2015	Peru	Minera IRL	Corihuarmi	Cu / B : 2008	Operations halted after 100 protestors invade site	Failure to deliver local benefits	
2015	Peru	Volcan	Chungar	Zn / B : 2000	One month protest	Want increased social spending and jobs	
2015	Peru	Newmont	Yanacocha	Au / B : 1993 experience 2004	Community protests work on the El Perol reservoir	Unspecified	
2015	Philippines	ZDMC	Benguet Nickel Mines	Ni / B :	Two-week protest by anti-mining citizens in Barangay Bayto "forcibly broke through human barrier"	Flooding and environmental damage - inaction from local officials prompted protests	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 8 to -10
2015	South Africa	Anglo American Platinum	Mogalakwena	Pt / B : 1993	Community protest/block road to mine - claim police shot at them. Company reports loss of 8600 oz. platinum production	Community demanding jobs and development funding	
2015	South Africa	Sylvania Platinum	Lannex and Steelport	Pt/ B	Violent community unrest	Locals lack water supply and electricity. Villages have no roads. Stark contrast to mining companies -- inequalities fueled protest	
2015	South Africa	Northam Platinum	Booyseindal	Pt / G : 2013	Community protests	Labour issues	
2015	South Africa	International Ferro Metals		B	Protests, road blockade, stone throwing in Modderspruit	Failure to provide promised jobs to locals	
2015	South Africa	Palaboura	Palaboura copper	Cu / B : 2004	Community wanted voice in worker selection/local jobs	Beneficiation	
2015	South Africa	Anglo American Platinum & Atlatsa Resources	Bokoni Platinum Mine	Pt / B : pre-2008	Violent protests in which angry residents of 27 villages blockaded one of the busiest roads in the province for two days.	Residents alleging that Bokoni Platinum Mine had reneged on its promise to develop the community. Failure to implement a social plan agreed to in 2010	
2015	South Africa	Ivanhoe Minerals	Platreef	Pt / G : 2015	Violent protests, clashes with police, arson, threats of extreme violence, equipment damage, blockades	Beneficiation	

Year	Country	Company	Mine	Commodity	Issue	Causes(s)	Score -5to -7 -8 to -10
2015	United Kingdom	Banks Mining	Highthorn project	Coal / G : TBD post 2016	Objectors are concerned about several issues, including noise, dust, light pollution and environmental damage	The proposals have sparked huge opposition and a petition against the bid has been signed by more than 4,000 people.	
2015	USA	Oxford Coal	Egypt Valley	Coal / G : TBD 2015?	Protests re permit to strip mine Egypt Valley	Wildlife area	
2015	USA	PacRim Coal	Chuitna	Coal / G : TBD post 2015	Citizen groups are protesting the project because they want to protect tributaries of the salmon-rich Chuitna River	Fisheries	
2015	USA	Resolution Copper Mining (JV Rio Tinto)	proposed copper mine	Cu / G : TBD post 2015	Apache protesters on Capital Hill, in New York & cross-country caravan	Mine proposed on sacred land	
2015	Zambia	Vedanta	Konkola/Nchanga	Cu / B : 1957	KCM, owned by Vedanta has been polluting the drinking water of villages in Zambia and threatening a wider health disaster, the Observer newspaper of UK has found - - water pollution, court case in UK	A confidential internal report commissioned from Canadian pollution control experts show that Vedanta Resources' giant mine in Zambia's Copperbelt region has been spilling sulphuric acid and other toxic chemicals into rivers, streams and underground aquifers used for drinking water near the mining town of Chingola.	

A.2 Companies Experiencing Mining Community Conflict 2012-2015

Colour code: **Conflict in 3 of 4 years**

Conflict in 4 of 4 years

2012	2013	2014	2015
	Adani Group	Adani Group	Adani Group
		African Barrick	
		African Minerals	
		Altyn Kumushtak Mining	
Anglo American	Anglo American	Anglo American	Anglo American Platinum
Anglo Gold Ashanti	Anglo Gold Ashanti	Anglo Gold Ashanti	
Aquarius Platinum			
Arch Coal			
			Antofagasta
	Areva		
B2Gold	B2Gold		B2Gold
			Banks Mining
			Banro
Barrick	Barrick	Barrick	Barrick
Bear Creek Mining		Bear Creek	
		Belo Sun Mining Corp	
	BHP Billiton		
	Candente Copper Corp.		
	Cassidy & Associates		
	Centerra	Centerra	Centerra
	China National Gold Group Corp		
	Chinalco		
		Cliffs Natural Resources	
		Coal India	
	Coal Valley Resources		
	Codelco	Codelco	Codelco
			Coeur Mining
	DeBeers		
			Desarrollos Zapal
Eastern India Coalfields Ltd			
Eco Oro Minerals			

2012	2013	2014	2015
			EcuaCorriente
	Eldorado Gold		Eldorado Gold
			Energy Resources Australia (JV Rio)
Excellon	Excellon Resources		
Fortuna Silver Mines			
	Gabriel Resources		
			Glencol
Xstrata	Glencore Xstrata	Glencore Xstrata	
God's Lake Resources			
Gold One International			
Goldcorp	Goldcorp	Goldcorp	
		GVK Hancock	
			Gujarat Mineral Development Corporation
Hochschild			
HudBay Minerals	HudBay	HudBay	
	IAMGOLD		
		Imperial Metals	Imperial Metals
			International Ferro Metals
		Iron Ore Co of Canada (Rio)	
			Ivanhoe Minerals
		Kappes, Cassiday & Associates	
			Karelian Diamonds
			Kaz Minerals
		Kinross	
Impala Platinum			
Inmet (First Quantum)			
Latin American Minerals			
Lonmin			
Lynas Corp	Lynas Corp		
			Mahanadi Coalfields Ltd
		Mayflower Mining	
		Metinvest Holding	

2012	2013	2014	2015
			Minera IRL
		Minera Panama/First Quantum	
			Mineros SA/HEMCO
		MMG	MMG
			New Talisman Gold
			Newcrest Mining
Newmont	Newmont	Newmont	Newmont
			Northam Platinum
	Oceanic Gold		
Osisko			
			Oxford Coal
			PacRim Coal
			Palaboura
	Paladin Energy Ltd		
Peninsula Gold			
	Resolution Copper (Rio &BHP)		Resolution Copper Mining (JV Rio Tinto)
		Rio Blanco Copper	
Rio Tinto	Rio Tinto	Rio Tinto	Rio Tinto
			RWE
		Sangchu gold mining industry	
			Severoceske doly
Southern Copper		Southern Copper	Southern Copper
			Sylvania Platinum
	Tahoe Resources		
	Taseko	Taseko	
	Ternium		
			Toro Energy
			TrueGold
Vale SA	Vale SA		Vale/BHP
	Valentine		
Vedanta Resources		Vedanta Resources	Vedante
			Volcan
			Vostok-Geoldobycha
	Wanbao Mining	Wanbao Mining	Wanbao Mining
			Wanjala Mining Company

2012	2013	2014	2015
	Whitehaven Coal	Whitehaven Coal	Whitehaven Coal
			Wollongong Coal
			ZDMC

A.3 Countries Experiencing Mining-Community Conflict 2012-2015

- As reported in the International Media via a FACTIVA search
- Brackets contain of conflicts scoring between -5 and -10 using a modified Goldstein scale of cooperation (+10) and conflict (-10). Yellow: -5 to -7/Red: -8 to -10

2012	2013	2014	2015
Argentina (3)			Argentina (1)
Australia (1)		Australia (3)	Australia (7)
			Bolivia (2) 1 1
	Brazil (1)	Brazil (1)	Brazil (1)
			Burkina Faso (1)
Canada (1)	Canada (4)	Canada (5)	Canada (1)
Chile (1)	Chile (2) 1 1	Chile (1)	Chile (3)
Colombia (1)	Colombia (3) 2 1		
			Czech Republic (1)
			DR Congo (1)
Dominican Republic (2)		Dominican Republic (1)	
	Ecuador (1)		Ecuador (1)
			Finland (1)
			Germany (1)
		Ghana (1)	
	Greece (4)		Greece (1)
Guatemala (1)	Guatemala (2)	Guatemala (1)	
Guinea (1)			
India (2)	India (2)	India (2)	India (2) 1 1
			Kenya (1)
		Kazakhstan (1)	
	Kyrgyzstan (1)	Kyrgyzstan (1)	Kyrgyzstan (2) 1 1
Malaysia (1)			
		Mauritania (1)	
Mexico (2)	Mexico (2) 1 1	Mexico (1)	Mexico (2) 1 1
		Mongolia (1)	Mongolia (1)
Mozambique (2)	Mozambique (2) 1 1		

2012	2013	2014	2015
	Myanmar (1)	Myanmar (2) 1 1	Myanmar (2)
			New Zealand (2)
Nicaragua (1)	Nicaragua (1)		Nicaragua (2)
	Niger (1)		
Panama (1)		Panama (1)	
			Papua New Guinea (1)
Paraguay (1)			
Peru (10) 6 4	Peru (5) 4 1	Peru (7) 4 3	Peru (5) 2 3
			Philippines (1)
	Romania (1)		
		Sierra Leone (1)	
South Africa (2)		South Africa (2)	South Africa (7) 4 3
	Suriname (1)		
		Sweden (1)	
		Tanzania (1)	
	Tibet (1)	Tibet (1)	
		Ukraine (1)	
	Uruguay (1)		
			United Kingdom (1)
USA (1)	USA (2)		USA (3)
			Zambia (1)

Appendix B Qualitative Analysis

B.1 One-to-One Interview Grouping (N=17)

Cerro Verde executive (4)	Cerro Verde staff <ul style="list-style-type: none">• Mine operations (1)• WWTP operations (2)	EPCM (3)
SEDAPAR (2)	ANA (1)	ALA (1)
SENACE (1)	Social groups (1)	Development NGO (1)

Field visits to La Joya (2): May 2016, October 2016 - Informal interviews (4)

B.2 Semi Structured Interview Guide

General background

- Can you tell me about your agency/company/organization's background and interest in the WWTP?
- If you think back to the time before the proposal for a waste water treatment facility was put forward, how would you describe the relationship between the Cerro Verde and the communities of Arequipa?
- Has that changed with the commissioning of the wastewater treatment plant? If so, how?

Water

- Can you tell me about water in Arequipa
 - Key water users
 - Infrastructure
 - Water supply and demand
 - Concerns
- In your opinion, what are the key water concerns/issues/priorities in the region?
- How did the conversation about wastewater treatment come about? Who brought forward the idea?
- How do you describe water quality in the region now that the WWTP is operating?

Consultation

- Can you describe the stakeholder engagement process for the WWTP?

- What steps were taken to engage with stakeholders as planning for a water treatment facility took shape?
- Did community representatives have any influence over the design and site selection for the facilities? Did the project design change at all because of public feedback? If so, how?
- What obstacles, if any, presented themselves and how were these addressed?
- Other mine projects in Peru have run into obstacles and conflicts that have prevented them from moving forward. What do you think was done differently here? What were the key factors that you attribute to achieving success?
- What can you tell me about the conversation with farmers? (Their reaction, interests and issues, engagement strategies, etc.)

Key Features of the Project

- What are the main elements of the agreement to build and operate the project?
- Which parties are signatories to the agreement? Has that changed over time?
- Please describe the facility ownership structure
- How did the various groups/stakeholders work together on this project? (roles and responsibilities, assessment of collaboration)

Financial Considerations

- Was any canon minero (CM) funding used for the project? If not, why not? Should this be an appropriate use of CM funding going forward?
- What does it cost to operate the WWTP on an annual basis?

- When the city of Arequipa or some other entity takes over operation of the treatment plant, is there a plan to ensure the ongoing financial viability of the WWTP?
- Is there a financing arrangement with SEDAPAR?
- Is there a breakdown of responsibilities between parties regarding the bulk infrastructure and the distribution network? Between the construction and financing? What about between operations and maintenance?
- How is success assessed/measured? Are there different metrics for SEDAPAR, Cerro Verde, Arequipa, and/or FCX?

Cerro Verde specific questions

- What options did the mine consider for securing access to water for the expanded operations proposed in 2011?
- Cerro Verde has been a member of the multi-sectoral water users' committee since 1983. Tell me about that experience
- How was the WWTP financed? As a standalone project or as part of the CV expansion?
Did the IFC and/or World bank participate? Any other financial institutions or international aid agencies (USAID?)
- Did you attempt to build a business case to earn internal support for the project? What did that involve?

Community relations

- How is social performance measured? What metrics will be used to assess health impacts of cleaner water?
- What is the Cerro Verde Foundation's role in water management?
- What sorts of agricultural programs are underway or planned with La Joya farmers and/or the Ministry of Agriculture? How is success measured?
- Is Cerro Verde trusted?

Lessons Learned

- What worked well?
- If you had it to do over again, are there things that you would have done differently?
- What advice would you give to other projects that may wish to emulate the success that Cerro Verde, SEDAPAR and the Arequipa region has experienced?

Other comments/Next steps?

B.3 NVivo Coding Chart

Cerro Verde.nvp - 1

FILE HOME CREATE DATA ANALYZE QUERY EXPLORE LAYOUT VIEW

Chart Comparison Diagram Explore Diagram Case Classification Sheets

Charts Diagrams Classification Sheets

Nodes Look for Search In Nodes Find Now Clear

Nodes Cases

Name	Sources	References
Agreements		5
Business case		8
Canon minera		6
Community relations		18
Economic impact		1
Engagement		8
Environment		2
Farmers		12
Lessons learned		11
Measures of success		3
Mitigation		2
Obstacles		7
Social risk		14
Tia Maria		6
Trust		11
Wastewater treatment		24
Water		30