Accounting and Sustainable Development Practices: An Interpretive Study of a Mining Company in Ghana

A thesis submitted in fulfilment of the requirements for the Degree of

Doctor of Philosophy in Accounting

2018

By

Kwame Oduro Amoako

College of Business and Law

University of Canterbury
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>ii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>vi</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vii</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>ix</td>
</tr>
<tr>
<td>Dedication</td>
<td>xi</td>
</tr>
<tr>
<td>Declaration</td>
<td>xii</td>
</tr>
<tr>
<td>Abstract</td>
<td>xiv</td>
</tr>
<tr>
<td>Chapter 1: Research background and motivations</td>
<td>1</td>
</tr>
<tr>
<td>1.1. Research overview</td>
<td>1</td>
</tr>
<tr>
<td>1.2. Research background</td>
<td>3</td>
</tr>
<tr>
<td>1.3. Motivations for research</td>
<td>6</td>
</tr>
<tr>
<td>1.4. Research objective and questions</td>
<td>11</td>
</tr>
<tr>
<td>1.5. Research methodology</td>
<td>12</td>
</tr>
<tr>
<td>1.6. Research contribution</td>
<td>14</td>
</tr>
<tr>
<td>1.7. Organisation of this thesis</td>
<td>16</td>
</tr>
<tr>
<td>Chapter 2: Research methodologies and methods</td>
<td>19</td>
</tr>
<tr>
<td>2.1. Introduction</td>
<td>19</td>
</tr>
<tr>
<td>2.2. Research philosophy and approach</td>
<td>19</td>
</tr>
<tr>
<td>2.3. Research elements</td>
<td>23</td>
</tr>
<tr>
<td>2.3.1. Literature review</td>
<td>25</td>
</tr>
<tr>
<td>2.3.2. Exploratory work: two pilot case studies</td>
<td>27</td>
</tr>
<tr>
<td>2.3.3. Case study design</td>
<td>29</td>
</tr>
<tr>
<td>2.3.4. Gaining access</td>
<td>30</td>
</tr>
<tr>
<td>2.3.5. Data collection methods</td>
<td>32</td>
</tr>
<tr>
<td>2.3.6. Data analysis and validity</td>
<td>37</td>
</tr>
<tr>
<td>2.4. Chapter Summary</td>
<td>40</td>
</tr>
<tr>
<td>Chapter 3: Sustainable development, corporate motivations and accounting</td>
<td>42</td>
</tr>
<tr>
<td>3.1. Introduction</td>
<td>42</td>
</tr>
<tr>
<td>3.2. Stakeholder theory</td>
<td>43</td>
</tr>
<tr>
<td>3.2.1. Categories of stakeholders</td>
<td>48</td>
</tr>
<tr>
<td>3.2.2. Why stakeholder theory?</td>
<td>50</td>
</tr>
</tbody>
</table>
3.3. The concept of sustainable development: a multiplicity of interpretations ...55

3.4. Sustainable development dimensions .................................................................57

3.3.2. Sustainability and social progress ..................................................................58

3.3.1. Environmental stewardship and ecologic sustainability ..............................59

3.3.3. Economic growth and economic sustainability .............................................60

3.3.4. Relationships among sustainable development dimensions .....................61

3.5. Motivations for companies appearing to operate sustainably .......................62

3.6. Sustainable development performance indicators .............................................65

3.7. Accounting and its rationale in an organisation ..................................................67

3.8. Sustainability accounting and reporting ............................................................70

3.8.1. Sustainability reporting defined ......................................................................70

3.8.2. Sustainability reporting indices ......................................................................72

3.8.3. The state of sustainability reporting .................................................................74

3.8.4. From sustainability reporting to action ............................................................77

3.9. Management accounting and control practices, and sustainability ..........78

3.9.1. Rationales of accounting practices in sustainable development ..................78

3.9.2. Management controls and accounting practices ............................................82

3.9.3. Management control and sustainable development practices .....................86

3.9.4. Accounting and management controls in sustainable development ...........89

3.9.5. Accounting practices and sustainability research in developing economies ....93

3.10. Chapter summary ...............................................................................................95

Chapter 4: The mining industry, sustainability in Ghana’s mining sector and profile of Gold Fields and its Damang Mine .................................................................98

4.1. Introduction ........................................................................................................98

4.2. The mining industry and its operations in Ghana ..............................................99

4.2.1. The Leading global mining players .................................................................100

4.2.2. Methods of mining exploitation ......................................................................101

4.2.3. Ghana’s mining sector ...................................................................................104

4.3. Sustainability, Ghana’s mining industry and organisational profile ........125

4.3.1. Sustainable development practices and the mining industry ......................125

4.3.2. Standardisation of sustainable development practices in the mining sector ....127

4.3.3. Sustainable development behaviours in the mining sector .........................131

4.3.4. Sustainability reporting in the mining sector ...............................................136

4.3.5. Sustainability reporting about Ghana’s mining sector .................................137
4.4. Profile of Gold Fields Limited and its Damang Mine .........................138
4.4.4. Critical perspective on Ghana’s mining sector and its contribution ..........147
4.5. Chapter summary ..................................................................................154

Chapter 5: Analysis of Gold Fields stakeholders, their perceptions of sustainability and motivations for sustainable development practices ........................................157

5.1. Introduction ............................................................................................157
5.2. Stakeholders of Gold Fields Damang Mine ............................................157
5.3. Stakeholders’ epistemological interpretations of “sustainability” .............161
5.4. Sustainable development practices of Gold Fields Damang Mine ..........172
  5.4.1. Departments at Gold Fields Damang Mine and their sustainability focus ....173
  5.4.2. How sustainability information is shared at Gold Fields .....................196
  5.4.3. Sustainability policies and standards at Gold Fields Limited ...............199
5.5. Motivations for mining firms in Ghana to practise sustainability ............202
5.6. Chapter summary ..................................................................................209

Chapter 6: Analysis of sustainability and accounting at Gold Fields and their related challenges .................................................................212

6.1. Introduction ............................................................................................212
6.2. Perceptions of Gold Fields’ sustainability performance ..........................213
6.3. Rationales for accounting in sustainable development practices at Gold Fields 224
6.4. Stakeholder perceptions of accountants’ involvement in sustainability ......231
6.5. Interpretations of sustainability and accounting challenges .....................233
  6.5.1. Tensions among the sustainability dimensions ....................................234
  6.5.2. High cost of sustainable development projects .................................236
  6.5.3. Contingent nature of sustainability cost ............................................238
  6.5.4. Stakeholders’ interest in economic benefits .......................................240
  6.5.5. Lack of coordination among stakeholders .........................................245
  6.5.6. Pressure on infrastructure and poor maintenance culture ..................249
  6.5.7. Challenges in data collection ............................................................251
  6.5.8. Security challenges from employees and illegal miners .....................253
  6.5.9. Power supply fluctuations .................................................................255
  6.5.10. Fluctuations in gold prices ...............................................................257
  6.5.11. Lack of resources for regulators ......................................................257
6.6. Chapter summary ..................................................................................258
Chapter 7: Conclusions, contributions and future research .......................................................... 260

7.1. Introduction .......................................................................................................................... 260

7.2. Research questions and methods ...................................................................................... 261

7.3. Findings and contribution of the study .............................................................................. 263

7.3.1. Stakeholders of Ghana’s mining sector ........................................................................ 264

7.3.2. Stakeholders’ perceptions of sustainability .................................................................. 265

7.3.3. Sustainable development practices at Gold Fields Damang Mine ............................ 266

7.3.4. How stakeholders perceive sustainability performance of Gold Fields ................. 270

7.3.5. The role and involvement of accountants in sustainable development practices 272

7.3.6. Sustainable development and accounting practices challenges .............................. 275

7.4. Contributions and implications ......................................................................................... 281

7.4.1. Theory .......................................................................................................................... 281

7.4.2. Methods ....................................................................................................................... 282

7.4.3. Practice ......................................................................................................................... 283

7.4.4. Policy ............................................................................................................................ 284

7.4.5. Research limitations ..................................................................................................... 286

7.4.6. Future research .............................................................................................................. 288

Appendix 1: Letter asking for consent from Gold Fields ......................................................... 290

Appendix 2: Research proposal summary sent to Gold Fields .............................................. 291

Appendix 3: Access approval letter from Gold Fields ............................................................... 294

Appendix 4: Interview guide .................................................................................................... 295

Appendix 5: Human Ethics Committee’s query and approval letters ................................... 297

Appendix 6: Participants’ information sheet .......................................................................... 299

Appendix 7: Reporting indexes ................................................................................................. 301

References .................................................................................................................................. 303
List of Tables

Table 2.1: Stakeholder Affiliations, Position and Interview Length ........................................34
Table 3.1: Internal and external motivations to engage in sustainability .................................64
Table 4.1: World’s largest mining companies based on market capitalization in 2017 ..........100
Table 4.2: World largest non-state owned listed gold mining companies in 2016..............101
Table 4.3: Sizes of the regions in Ghana ...............................................................................107
Table 4.4: Profile of leading gold mines currently operating in Ghana...............................116
Table 4.5: Major institutions in Ghana’s mining sector and their roles..................................119
Table 4.6: Legislation and reforms governing Ghana’s mining sector..................................122
Table 4.7: Akoben environmental and social performance indicators .................................125
Table 4.8: Environmental hazards of mining activities .........................................................126
Table 4.9: ICMM Members’ adoption of Global Voluntary Standards (2009) .....................130
Table 4.10: History of Gold Fields Damang Mine .................................................................143
Table 4.11: National HIV prevalence rate compared with Wassa Amanfi District.............148
Table 5.1: Dimensions of Gold Field’s sustainable development practices .........................163
Table 5.2: Departments, basic functions and contributions towards sustainability ..........176
Table 5.3: Summary of mining and processing cost at Gold Fields Damang Mine ..............193
Table 5.4: Key economic performance metrics at Gold Fields Damang Mine ..................196
Table 6.1: Akoben’s rating of Gold Fields sustainability performance ...............................214
Table 6.2: Responses on performance indicators and ratings .............................................219
Table 6.3: Gold Fields Ghana’s financial summary of profits in US$ million .......................223
List of Figures

Figure 1.1: Research aim and questions ................................................................................. 12
Figure 1.2: The conceptual map.................................................................................................. 18
Figure 2.1: Data collection and analysis chronology................................................................. 24
Figure 3.1 Conceptual framework of sustainable development practices and accounting ...... 45
Figure 3.2: The sustainability dimensions ................................................................................ 58
Figure 3.3: The Sustainability Balanced Scorecard................................................................. 67
Figure 3.4: Management control: an interdisciplinary subject .................................................. 85
Figure 4.1: Open pit mine .......................................................................................................... 102
Figure 4.2: Image of placer mining............................................................................................ 103
Figure 4.3: Underground mining ............................................................................................... 104
Figure 4.4: The location of Ghana in Africa .............................................................................. 105
Figure 4.5: Regions of Ghana and their capital cities ............................................................... 106
Figure 4.6: Ecological zones of Ghana ....................................................................................... 108
Figure 4.7: Gold production in Ghana (1980-2000) ................................................................ 112
Figure 4.8: Ghana’s gold deposits, major gold producers and locations .................................. 113
Figure 4.9: Share of Ghana Chamber of Mines Gold Output (2015) ....................................... 115
Figure 4.12: Operating model and structure of Gold Fields ...................................................... 139
Figure 4.13: Gold Fields Limited’s Global Presence ................................................................. 139
Figure 4.14: Gold Fields’ regional attributable production ....................................................... 140
Figure 4.15: Locations of Gold Fields in Ghana ....................................................................... 142
Figure 4.16: Gold Fields Damang Mine Infrastructure Map ...................................................... 144
Figure 4.10: A water body in Ghana polluted by Mining activities ........................................... 151
Figure 4.11: Commodities in Merchandise Exports (2015) ..................................................... 152
Figure 5.1: Stakeholders of Gold Fields Damang Mine ........................................................... 160
Figure 5.2: Gold Fields Limited’s balanced scorecard ........................................165

Figure 5.3: Community projects: A: a clinic; B: an ICT centre; C: a community centre .....182

Figure 5.4: A: Active tailing storage facility; B: Tailing storage facility under construction; C: 
Active mining pit ........................................................................................................186

Figure 5.5: A: rehabilitation of a mined area in progress; B: demonstration farm; 
C: rehabilitated tailing storage facility, D: oil palm plantation on rehabilitated mining 
area ..................................................................................................................................187

Figure 5.6: Gold Fields Damang Mine’s processing site ..............................................194

Figure 5.7: Samples of environmental notices on employees’ noticeboard ....................198

Figure 5.8: Gold Fields Damang Gold Mine ISO14001 and OHSAS 18001 certificates .....201

Figure 5.9: Sustainability message on Gold Fields Damang Mine’s plant site ................204

Figure 6.1: Prohibition sign on a rehabilitated river ......................................................252

Figure 6.2: Two of the river bodies in Ghana polluted by illegal mining ......................255
Acknowledgement

Working on a doctoral thesis was a challenging yet life changing experience. In all spheres of completing my doctoral thesis, I had incredible support from many people, to whom I would like to express my wholehearted and sincere gratitude.

Most of all I would like to thank my PhD supervisors, Associate Professor Beverley Lord and Dr Keith Dixon. Throughout the process of preparing this thesis, their intellectual support and encouragement particularly in our various fortnight meetings was overwhelming. Their attention to detail as well as their uncapped striving for excellence made a tremendous impact on the success of my thesis. I cannot ignore recognition of their ability to maintain a holistic view on the matter and their brilliance in conveying complex ideas and concepts.

I would also like to take this opportunity to thank the University of Canterbury and the Department of Accounting and Information Systems for giving me the opportunity to carry out my doctoral research and further for awarding me the ACIS PhD scholarship towards my tuition fees. My heartfelt gratitude also goes to the management of Sunyani Technical University Ghana for granting me study leave to pursue my doctoral studies.

I am very much grateful to Gold Fields Damang Mine for granting me access to conduct this study. I owe profound gratitude to the Safety Health Environment and the Finance Departments for their enormous contribution towards this thesis. My special thanks go to Mr Damien Mawuli, Mr Francis Nyame and Mr Samuel who followed up my access application and led me to key informants and granted me a field tour and accommodation on site during my data collection.

Finally, and certainly not least, I am highly indebted to my ever supportive wife, Nana Akua and kids, Kwadwo, Serwaa and Sarpomaa who gave me confidence and motivation with their
patience and understanding whiles I pursued the Doctoral degree. To all my relatives, especially my Dad, Dr. Isaac Oduro Amoako, my mum, Margaret Oduro Amoako, my step mum, Margaret Nuako and my siblings, Monica, Kwadwo, Yvonne and Ama for their financial support and encouragement. Not forgetting my friends whose prayers and encouragement strengthened me to achieve success in my Doctoral studies.
Dedication

I dedicate this thesis to everyone who encouraged and contributed towards my education up to this level.
Declaration

This is to declare that:

i. I am responsible and the author of the studies presented in this thesis.

ii. All quotation extracts have been distinguished and the sources specifically acknowledged.

List of publications and conference presentations during the PhD Study

Journal Article


Conference presentations


Abstract

Recently, sustainability has received increased attention from stakeholders of companies and researchers. The willingness of sustainability stakeholders to participate in sustainable development practices and rely on sustainability reporting depends on their satisfaction with the company's sustainable development performance, which is determined by the extent stakeholders perceive that their expectations on sustainable development practices are addressed. Despite calls for more dialogue and engagement with stakeholders, with global surveys consistently reporting that stakeholder pressure is a key motivator for improved managerial focus on sustainable development in companies, research on accounting practices and management controls in relation to sustainable development have mainly focussed on managerial and employee practices and perceptions. Drawing mostly on stakeholder theory, this thesis identifies stakeholders of a multi-national mining company's subsidiary operating in Ghana and explores how these stakeholders understand “sustainability”, its related practices and the sustainable development performance. The study examines the perceived role of accounting practices in the dimensions of sustainable development and identifies challenges related to sustainable development in Ghana's mining sector.

This study finds that, based on their expectations, different stakeholder groups have divergent perceptions of what sustainability means and of the sustainable development performance of the case multinational mining company's subsidiary. Whilst stakeholders were rating down the case company's sustainability performance in their areas of interest, they tend to rate the sustainable development performance of other areas higher. There were several community development projects initiated by the case mining company’s subsidiary. Evidence in this thesis indicates that these projects were not sustainable as they were not well maintained due to the case mining company's desire to initiate new projects, perhaps for reporting and other legitimating purposes. It was found that the company may not be interested in initiating capital
intensive community development projects unless they will benefit from such initiatives.

Findings from this thesis indicate how fluid sustainability is by demonstrating that sustainability practices affect food security, nutrition, recreation and spiritual matters of communities nearby. Although stakeholders perceived several roles of accounting in sustainable development practices of the case mining company's subsidiary, these perceived roles were more of managerial control than accounting. It was realised that sustainable development practices at the case mining site were capital intensive and accountants' participation in sustainability are overwhelmed with controlling the high sustainability cost; hence, business as usual. Despite several initiatives of the mining company towards sustainable development, a number of challenges were identified, mostly stemming from tensions among social, environmental and economic dimensions of sustainability within the case company and among the stakeholders. These tensions appear to be driven by economic interests on the part of both the case company and stakeholders. Hence, findings from this study raise doubts about the genuine interest in sustainability of stakeholders including community members, employees and even some regulators.

The findings support the need to understand the expectations of specific stakeholder groups to increase efficient collaboration between companies and stakeholders, and thus enhance sustainability. It also suggests the need for defining and enforcing clearer policies and guidelines on sustainability in the mining sector, particularly in developing countries. The study recommends to management and accounting practitioners in corporate and regulatory organisations to structure the accounting function so it reflects monitoring of the state of the planet. The study makes many contributions to knowledge but these are the key ones. First, this study adds to the literature on sustainable development stakeholders, such as regulators, and their relationships with mining companies, thus adding to our understanding of mining-stakeholder perceptions and relationships. This can have additional benefits such as increasing
stakeholder engagement in assessment and reporting initiatives as well as a feedback effect of nurturing awareness. Second, by engaging with the empirical world of accounting and management control, findings from this study will provide theoretical insights valuable for academic researchers as well as a platform which can be used by researchers to establish a fruitful dialogue with accounting and management practitioners. This study contributes to the call for management accountants and managers to consider sustainability as an integral part of their sustainable development decision-making.

Future research could examine the stakeholder response and approach to sustainable development practices across subsidiaries of various industrial sectors by using surveys or case studies to establish the variations. It is recommended that similar studies are conducted to compare how the role of accounting is influenced by different political cultures, for example, within the same multinational mining company’s operations in different countries. Similarly, future research could also focus on the stakeholder activity that influences sustainable development subsidiaries across developed and developing countries, where stakeholder factors influencing multinational companies may vary. Comparative case studies examining different stakeholder perceptions on accounting and sustainable development among subsidiaries and head office, and the resultant role of accounting practices in sustainable development initiatives by multinational mining companies’ subsidiaries could also extend my findings.
Chapter 1: Research background and motivations

“When the last tree is cut down, the last fish eaten, and the last stream poisoned, you will realize that you cannot eat money”.

Greenpeace quote

1.1. Research overview

This study is about both sustainability, as it has come to be popularly understood in international public policy (see Kuhlman & Farrington, 2010), and accounting, as a professional discipline of a wide and varied application based on calculative practices. The study focusses on how sustainable development practices and accounting play out transactionally and ideologically for various human purposes (e.g., to profit, control, or empower) with human and broader consequences (see Gårseth-Nesbakk & Timoshenko, 2014; Mellemvik, Monsen & Olson, 1988; Neu, 2000; Vollmer, 2003, 2007; Wallace & Briston, 1993).

Awareness of the environmental repercussions of doing business has been rising for several decades (Adams & Frost, 2008; Deegan & Rankin, 1997). It is claimed, “Free enterprise cannot be justified as being good for business, it can only be justified as being good for society” (Drucker, 1977, p. 40). There is a rising demand for the way business is undertaken and accounted for to reflect these repercussions, for example, by expecting business directors to utilise sustainable development practices, including sustainability reporting featuring within their businesses (Adams & Frost, 2008; Holland & Foo, 2003). Concomitantly, in the reports directors make about the businesses they govern, social and environmental matters associated with their companies should be made known to persons burdened with the not unproblematic
role of stakeholders (Fassin, 2009; Gray, Kouhy & Lavers, 1995; Mainardes, Alves & Raposo, 2011; Parmar et al., 2010; Phillips, Freeman & Wicks, 2003). To varying extents, reporting of these matters have been integrated into corporate reports, which previously were focussed on economic matters. This integrated reporting is becoming increasingly relevant globally, arguably leading to changes in the business world, especially in industries with high environmental impacts (Junior, Best, & Cotter, 2014; Moneva, Archel & Correa, 2006; Perego, 2009). Investigations for this study were carried out in one such industry, mining, but one whose products have comprised essential and other raw materials for innumerable other industries, including agriculture, power, construction, manufacturing and transport, since time immemorial (Sauer, 2014).

This thesis investigates sustainable development initiatives, sustainability performance, related challenges and the perceived role of accounting in sustainability efforts of a subsidiary of a multinational mining company operating in Ghana. The study builds on the idea that sustainable development practice of corporate organisations cannot neglect perceptions of stakeholders, at least some of whom interest themselves in a company’s sustainable development obligations. My exploration on sustainability practices, sustainability performance and how stakeholders perceive the connection between accounting and sustainability is based on my belief that a total dependence on the perceptions of resource acquirers (entrepreneurs and managers) creates a gap in our comprehension of what other stakeholders expect from corporations (Choi & Shepherd, 2005; Frooman, 1999) in regard to social accountability, if anything.

Examining the perceived connection between accounting and sustainability can help corporations determine how accountants’ efforts towards sustainability practices and policies contribute to their value creation in meeting stakeholder expectations. This idea is sometimes
predicated on the argument that the return on sustainability investments is based firmly on public recognition of a company’s behaviour being socially responsible and environmentally friendly (Costa & Menichini, 2013; Khelif, Hussainey & Achek, 2015), suggesting that sustainability in companies and organisations in general has three dimensions. These dimensions, namely economic viability, social responsibility and environmental responsibility (Elkington, 2004), have given rise to the notion in business accounting parlance of the Triple Bottom Line, or that “social and environmental responsibility cannot stand in isolation from economic viability” (Gould, 2011, p. 1), usually with the assumption that there are opportunity costs and trade-offs among dimensions.

1.2. Research background

Sustainable development is an idea which gained prominence through the publication of *Our Common Future* (World Commission on Environment and Development (WCED), 1987). It presented a conceptualization explanation of the concept of sustainable development, also known as sustainability, in discussing efforts to reduce damage to the environment (Bebbington & Unerman, 2017). WCED (1987) defines sustainable development as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (p. 43). The concept of sustainability forms the foundation for many global initiatives, including the Earth Summit in 1992, where the adoption of Agenda 21 encouraged the practice of environmentally sustainable management by developing responsible entrepreneurs (Hobson & Essex, 2000; Lafferty & Eckerberg, 2013).

Companies represent a large chunk of the productive resources of the world economy, and so one cannot achieve sustainable development without business support (Bansal, 2002; Barkemeyer, Holt, Preuss & Tsang, 2014; Hopwood, Mellor & O’Brien, 2005), nor without social enterprises or governmental organisations for that matter. The increasing external
pressure from stakeholder groups, such as financial institutions, socially responsible investors, government, and community lobby groups (e.g., members of host communities) among others, now obliges companies to have more interest in sustainable development accountability (Milne & Gray, 2013; Uwalomwa, 2011). As suggested by the concept of a social contract (Harrison, 2004; Harrison & Freeman, 1999), expectations of organisations go beyond maximising profit to the requirements to comply, be ethical and be a good corporate citizen (Carroll, 2016), which all involve substantial investments in sustainable development practices by companies (Epstein & Buhovac, 2014; Gray, O'Dochartaigh & Rannou, 2016). In regard to this trend, the rapid increase in sustainable development costs has now prompted companies to begin to integrate sustainability into managerial decisions at all levels.

Whilst the influence of accounting varies, information of an accounting nature, formal and informal, is a powerful voice within the organisation, and has been observed to influence not only decision-making but also the strategy, culture, management functions, group perceptions and other aspects of organisations (e.g., Dent, 1990; Hopwood & Unerman, 2010). Moreover, the role and influence of accounting go beyond organisational borders, as accounting is entwined with the discourses and challenges embedded within wider society, and the operation of accounting systems can serve to legitimise corporate actions to external societal groups that regulate access to resources (Aguinis & Glavas, 2012; Won Kim & Matsumura, 2017; Kolk, 2005; Soderstrom, Soderstrom & Stewart, 2017). Today, accounting can have a major role in the integration of sustainability in corporate decisions: social and environmental accounting is after all directly concerned with communicating and making transparent the social and environmental impacts of organisations (Elkington, 2004), and seeks to address the trade-off between economic pursuit, social responsibilities and environmental stewardship (Albelda, 2011; Milne & Gray, 2013).
In the accounting discipline, the contribution of accounting to sustainable development is twofold: external reporting, described variously as sustainable development reporting, sustainability reporting, triple bottom line corporate responsibility reporting, non-financial reporting, corporate responsibility reporting, corporate citizen reporting or integrated reporting; and longstanding internal accounting practices, such as full cost accounting, cost management, material flow cost accounting, life cycle costing, capital appraisal, and corporate performance evaluation, but with environmental, social or similar adjectives added by way of signals or qualifications. According to surveys of corporate responsibility reporting conducted by KPMG (see KPMG, 2013, 2014, 2015, 2017), these sustainability accounting practices have become common practice for most leading organisations. They tend to be more concerned with the pursuit of sustainable development than traditional accounting practices (Bebbington, Unerman & O'Dwyer, 2014), and, arguably, would seem to support sustainable development, at least in organisational contexts (Bebbington & Larrinaga, 2014). They are among valuable intangible assets that stimulate organisational change to improve sustainability performance (Adams & Frost, 2008; Albelda, 2011; Dyllick & Muff, 2016; Milne & Gray 2013).

Accounting practices are embedded in organisational systems and structures, shaping them and being shaped by them in turn (Contrafatto & Burns, 2013). Accounting does not operate in technical isolation, and proposals for its development or reform should appreciate this (Holt, 2005). Hence, researchers examining the perceived role of accounting practices in sustainable development by corporate bodies have increasingly stressed that environmental concerns need to be internalised into the strategic, operational and governance processes of companies (Milne & Gray, 2013; Redcliff, 2005; Robinson, Kleffner & Bertels, 2011).
1.3. Motivations for research

This study is motivated by the desire to see improvement in sustainability practices in the mining sector. One thing this study considers is whether and how stakeholders perceive sustainability and accounting to be connected. Such connections are widely theorised but may not hold, particularly if accounting is understood narrowly (e.g., as a neutral information technology, or a private practice of businesses), in which case concerns about sustainability may be low, or even alien (Elijido-Ten, Kloot & Clarkson, 2010). Accounting connotations may also not hold if stakeholder connotations confer on people rights and privileges that they have not experienced before, or even been systematically denied. In this regard, the researcher applies notions associated with stakeholder theory (Freeman & Reed, 1983), which assumes that a company has a variety of stakeholders with different opinions about sustainable development practices and how accounting contributes to such practices.

Multinational companies have several obvious stakeholders and could have many more, depending on one's perspective of stakeholders, which could extend to anyone with an interest in an industry, its activities and their consequences. For instance, in the mining sector, de Villiers and Alexander (2014) identified community residents, employees, suppliers, creditors and regulators as stakeholders. Recently, calls have been made for more dialogue and engagement with sustainable development stakeholders (Diouf & Boiral, 2017; Sierra-García, Zorio-Grima & García-Benau, 2015; Strand & Freeman, 2015), with global surveys consistently reporting that stakeholder pressure is a key motivator for improved managerial focus on sustainable development in companies (KPMG, 2015). Despite these calls, extant sustainable development research in accounting, such as those just enumerated, has mainly focussed on managerial and employee practices and perceptions. Thus, even though the concept of sustainability is not new in accounting research, sustainability as a concept that
examines the opinions of a broader range of stakeholders has not been widely studied in accounting research.

My desire to see improvement in the sustainability performance of mining companies, particularly in my home-country, Ghana, led me to take an interest in Gold Fields Limited and its Damang Gold Mine. Gold Fields Limited is one of the world's largest listed mining companies and has substantial operations across Ghana. Being a Ghanaian and having been an academic from 2009 to 2015 in a region where mining activities (legal and illegal) are booming, I witnessed some negative social, environmental and economic impacts these had in the area, in spite of the contributions mining companies were making to the communities and the nation as a whole. Although, mining companies are said to be pioneers of sustainability (Global Reporting Initiative (GRI), 2015; KMPG, 2011), from my observation this does not translate into sustainable development practices in Ghana, as mining activities have, among other things, caused pollution in almost all water bodies there (Fatawu & Allan, 2015). These issues made me curious about the sustainable development practices of the mining sector and how accounting fits into sustainability from a stakeholder perspective.

The researcher is cognisant of the large body of research on the link between accounting practices and sustainability. Among this research are studies fostering social sustainability management through safety controls (e.g., Gunarathne, Samudrage, Wijesinghe & Lee, 2016), studies on improving environmental accounting (e.g., Christensen & Himme, 2017), studies identifying energy efficiency complexities (e.g., Virtanena, Tuomaala & Pentti, 2013), studies influencing environmental strategy and performance indicators (e.g., Rodrigue, Magnan & Boulianne, 2013), studies integrating corporate sustainability assessment, accounting, control, and reporting (e.g., Maas, Schaltegger & Crutzen, 2016), studies developing environmental management control systems (e.g., Pondeville, Swaen & De Rongé, 2013), studies articulating
environmental accounting trade-offs (e.g., Christ, Burritt & Varsei, 2016), studies of social and environmental accounting, organisational change and accounting (e.g., Contrafatto & Burns, 2013), and studies about the role of accounting and the management accountant in the environmental management systems (e.g., Wilmshurst & Frost, 2001) and the role of management accountants and accounting practices acting as facilitators of sustainable development (e.g., Albelda, 2011).

From the literature just enumerated, it could be inferred that while the “majority of sustainability accounting and reporting studies, including those focusing on the mining industry, is on environmental issues, social issues are equally relevant and need to be explored in further depth” (Lodhia & Hess, 2014, p. 48). Moreover, mining companies, “do have a role to play in regard to social issues such as health and safety, poverty alleviation, local community development, equitable resource sharing and so forth” (Lodhia & Hess, 2014, p.48). These quotes reflect the notions referred to as related earlier of sustainability having three dimensions: “economic viability, social responsibility, and environmental responsibility” (p. 2). However, reflecting the traditional ascendancy of the economic viability dimension, researchers have noted that sustainable development practices are often driven by the business case, with business entities focussing on competitive advantage and legitimacy (Albelda, 2011; Buhr, Gray & Milne, 2014). Indeed, researchers, including some in accounting, claim that despite the growing use of the term “sustainability reporting” to describe such disclosures, companies have overlooked the fundamental tenets of the sustainability concept. These researchers doubt the willingness of companies to act sustainably, arguing that sustainability accounting and reporting have little, if anything, to do with sustainable planning, control and development (Gray & Bebbington, 2007; Gray, 2006; Milne & Gray, 2013; Blome, Foerstl & Schleper, 2017; Parguel, Benoît-Moreau & Larceneux, 2011). Nevertheless, some of these studies (e.g. Amoako, Lord & Dixon, 2017; de Villiers & Alexander, 2014; Fonseca, McAllister &
Fitzpatrick, 2014; Jenkins & Yakovleva, 2006; KPMG, 2015; Murguía & Böhling, 2013) make assumptions about corporate motives and processes from an examination of corporate disclosures, and only make limited reference to the broader social, political and economic context in which the reporting is occurring.

There is a plentiful volume of research in the minority part of the world where incomes are high—the so-called developed countries and advanced economies (Goyal, Rahman & Kazmi, 2013; Momin & Hossain, 2011). In contrast, there is a dearth of research in larger areas of the world where incomes are low—the so-called developing countries and emerging economies—which includes the setting of this study. The dearth of research may be because the mining industry is carried out by people from the advanced economies (Azapagic, Clift, Perdan, 2004), who may be reluctant for their behaviours to be scrutinised, evaluated and criticised. What is more, it seems unlikely that the pattern of growth in sustainable development practices by corporate bodies in developed countries in recent years is occurring in these poorer countries as well—with economic poverty one finds other kinds of poverty, including political, legal and social (Ellis, 1984). However, there is research showing that developing economies face several sustainability challenges from environmentally sensitive industries such as mining (Amponsah-Tawiah, 2016; Cobbina, Myilla & Michael, 2013). For example, illegal mining, deforestation, noise, water and air pollution, human rights abuse, land degradation, child labour, and corruption continue to be a challenge to sustainable development of developing countries (Domfeh, Ahenkan & Bawole, 2012).

As for Ghana itself, the study was conducted at a time when the business climate there had significantly improved, making it an attractive destination for foreign mining companies. By 2009, Ghana was the second-ranked African gold producer after South Africa and had become the world's ninth largest producer of gold, with 3.8% of global production, up from 2.6% five
years earlier (Bloch & Owusu, 2012). The number of companies joining the mining sector in Ghana keeps increasing, indicating that the industry will continue to grow and become a vibrant and potent force in the economic drive of the country (Sakyi, Commodore & Opoku, 2015; Klobodu & Adams, 2016). Gold mining tends to be perceived negatively in Ghana and is seen as providing far less than it should in terms of public revenue, employment, skills development and localised economic development (Bloch & Owusu, 2012).

The increase in multinational mining companies’ presence in Ghana and the expansionary consequences heighten the need for soliciting stakeholders' opinions to encourage new entrants to comply with existing laws on sustainable development (Welbeck, 2017). This is especially so because no studies equivalent to the present one have been undertaken before, as far as one can tell from published accounting research. This absence of previous studies would not be important if not for the vital argument that assumptions used in relation to developed countries to explain social and environmental disclosures may not be even moderately applicable (Momin, 2013; Welbeck, 2017; Xu & Meyer, 2012) to the likes of Ghana, because of diversities known to occur across countries and over time from prior studies on social disclosures (de Villiers & Alexander, 2014; Hackson & Milne, 1996; Momin & Hossain, 2011).

This study breaks new ground in other ways; it sheds light on sustainable development practices that mining companies report on and the role of accounting practices in those sustainability-related practices. Indeed, the study can be seen as a response to calls for more research that engages with reporting organisations (Adams & Frost, 2008; Adams & Larrinaga Gonzalez, 2007; Higgins, Milne & Van Gramberg, 2015; Parker, 2012) in order “to capture the complexity of responses and approaches to legitimacy-seeking in the context of CSR [corporate social responsibility] practices of MNE [multi-national enterprise] subsidiaries through detailed case studies” (Beddewela & Fairbrass, 2016, p. 519).
1.4. Research objective and questions

As indicated earlier in this chapter, the central objective of this study is to explore the sustainability practices, the sustainability performance, the perceived significance of accounting to sustainable development and related challenges. The research does not aim to examine any specific accounting techniques. Rather, it will identify the key stakeholders of a Gold mining company’s subsidiary operating in Ghana, how these stakeholders understand “sustainability” and how the mining firm operationalises sustainability. The main focus is on how stakeholders perceive the role of accounting in sustainable development.

To attain the objective of this study, the research delved into the following matters:

i. Who are the stakeholders in Ghana’s mining sector?

ii. What are the epistemological interpretations of “sustainability” among these stakeholders?

iii. How does a multinational mining company’s subsidiary in Ghana operationalise sustainable development and why?

iv. What is the sustainability performance of a mining company’s subsidiary operating in Ghana?

v. What are stakeholders’ views on the role and involvement of accountants in sustainability in Ghana mining sector?

vi. What are the sustainable development challenges to Ghana’s mining sector?

By answering these specific questions, the study informs the social processes that render accounting and control relevant to sustainable development practices. The logic running through these questions is represented in the conceptual map shown in Figure 1.1.
Figure 1.1 is a graphical representation of my research aim and how it connects to my research objectives. Thus, I first identify stakeholders of a company’s subsidiary and how they understand sustainability. This is followed by examining the sustainability practices, the motivations for such practices and the sustainability performance of the mining firm’s subsidiary. Next I examine the role and involvement of accounting in sustainability from the perspectives of stakeholders. Finally, I explore the sustainable development challenges of Ghana’s mining sector from the perspectives of various stakeholders.

An overview of how the researcher went about collecting data and analysing them in order to answer these research questions are presented in the next section.

1.5. Research methodology

The evidence about sustainable development practices, performance, challenges and the role of accounting used in this study is derived from a comprehensive single case study of a Ghanaian subsidiary of a large multinational mining company. Data collection was extensive using literature reviews, which guided the semi-structured interviews, complemented by
document analysis as well as informal discussions and observations. Furthermore, information on websites, annual reports and other internal company documents were examined.

The approach taken is predicated on the idea that engagement with practice is required in order to improve accountability (Adams & Larrinaga, 2007; Epstein & Buhovac, 2014; Parker, 2005) and to gain new insights regarding sustainability-related practices (Gray & Laughlin, 2012) to engage stakeholders. By engaging with the empirical world of accounting practice, findings from this study provide theoretical insights valuable for academic researchers as well as a platform which can be used by researchers to establish a fruitful dialogue with accounting and management practitioners. This study contributes to the call for accountants and managers to consider sustainability as an integral part of their sustainable development decision-making (Albelda, 2011; de Villiers & Vorster, 1995; Ferreira et al., 2010; Mistry et al., 2014; Parker, 2000; Wilmshurst & Frost, 2001).

As this study focusses on the social processes and interactions relating to accounting practices and sustainable development practices occurring in an organisational setting, I take an interpretative approach to the research. Data were analysed through a gradual interpretation conducted over several iterative phases, framed around research questions and themes drawn from prior literature. I have taken the perspective that meaning and mode of utilisation of accounting information are not absolute but relative to individual, organisational and environmental influences (Otley, 2016), especially stakeholder demands (Hope, Thomas & Vyas, 2017; Mitchell, Van Buren, Greenwood & Freeman, 2015). Thus, I proceed with the view that the research and the researcher are inseparable, such a view being consistent with constructivism, as distinct from positivism (Burrell & Morgan, 1979).
1.6. Research contribution

Researchers are encouraged to engage with industry and policy-makers to conduct studies that have impact (Font, 2017), making contributions to both the literature and policy on sustainable development (Ball, Grubnic & Birchall, 2014; Bebbington & Larrinaga, 2014; United Nations (UN), 2012). Doing so from the perspectives of stakeholders, this study investigates the sustainable development practices of Ghana's mining sector, motivations for such practices, perceived sustainable development performance and related challenges, as well as how accounting practices fit into such practices.

A further contribution of this study is to answer the call for further research into the use of management controls and accounting for sustainability (e.g., Arjaliès & Mundy, 2013; Ferreira & Otley, 2009; Gond et al., 2012; Langfield-Smith, 1997; Simons, 1990). To date, Baker et al. (2011) and Crutzen and Herzig (2013) indicate that only a few studies have analysed the role of management control in the integration of sustainable development practices.

Researchers have been called on to extend sustainability research beyond a corporate focus; Lodhia and Hess (2014) assert that studies of other institutions would be worthwhile. This study adds to the literature on sustainable development stakeholders and their relationships with mining companies (e.g., McDonald & Young, 2012), adding to the understanding of mining-stakeholders’ perceptions and relationships (Lodhia & Hess, 2014). It identifies stakeholders of Ghana's mining sector and explores their perceptions of the meaning of sustainability, how the case mining firm is performing and challenges of sustainable development that Ghana's mining sector faces. Thus, by examining the notions and performance of sustainability as perceived by stakeholders, significant gaps in perceptions of various stakeholders may point to failings by corporate organisations in trying to fulfil sustainable development. This could have additional benefits such as increasing stakeholder
engagement in assessment and reporting initiatives as well as a feedback effect of nurturing awareness (Mascarenhas, Nunes & Ramos, 2014; Momin, 2013).

On policy, this study is timely given the increasing importance of sustainability issues in the mining sector (de Klerk & de Villiers, 2012; de Villiers et al., 2014; Glennie & Lodhia, 2013; Lawrence, Reisinger, Mullan & Jackson, 2013) and calls for more research relating to demands for improvement in sustainability matters (e.g., see Ball & Craig, 2010; Bebbington & Larrinaga, 2014; Bebbington & Unerman, 2017; Szczepankiewicz & Mučko, 2016), especially in environmental sensitive industries like mining. Mining industry associations, such as the International Council on Mining and Metals (ICMM) and the Ghana Chamber of Mines (GCM), are currently promoting such good sustainable development practices among their members. Yet, to date, very few scholars are questioning how stakeholders perceive such initiatives, let alone exploring stakeholders' perceived challenges of sustainability, as this thesis sets out to do.

The attention of most scholars' inquiries about the outcomes of initiatives is still on data description, quality of reports and identification of trends (Amoako et al., 2017; de Klerk & de Villiers, 2012; Boiral & Henri, 2017; de Villiers et al., 2014; Diouf & Boiral, 2017; Jenkins, 2004; Jenkins & Yakovleva, 2006; Mudd, 2007a; Peck & Sinding, 2003; Sanchez, 2008; Szczepankiewicz & Mučko, 2016), thus reflecting early work on these matters (e.g., see as Beets & Souther, 1999; Belkaoui, 1976; Choi, 1998; Deegan 1999; Gray & Bebbington, 2000; Guthrie & Parker, 1989; Mathews, 2001; Milne, 1996; Parker, 1998). While these works have helped sustainable development initiatives among companies, there seems greater potential for further studies that examine what is being practiced now and how stakeholders perceive such practices, particularly in an environmentally sensitive industry such as mining.
According to Lodhia and Hess (2014), “The global operations of mining warrant studies of various contexts. Research on sustainability accounting and reporting in the mining industry should not only be restricted to the developed part of the world” (p. 48). Thus, even though there have been few studies in developing economies (e.g., see Gilberthorpe & Hilson, 2016; Hilson et al., 2014; Kumah, 2006; Murguía & Böhling, 2013; Newbold, 2006), the idea, findings and questions these provide can be extended and so prompt further consideration of sustainable development practices in developing and underdeveloped countries (Momin & Parker, 2013), especially with respect to multinational companies’ operations in these parts of the world (Lodhia & Hess, 2014). Hence, an aim of this thesis is to contribute to the literature on accounting and sustainable development in developing countries.

1.7. Organisation of this thesis

The thesis is organised into seven chapters as follows:

Chapter 1 provides an overview of the thesis, purposes, aim and content including the background of the researcher and his motivations for the study. It describes the problem and the research objectives and questions; outlines the methodology; and ends with a section about how the study is organised and structured in terms of the research aim, objectives and the aim of each chapter.

Chapter 2 sets out the argument for the research in terms of methodology, and explains the process followed to review the literature, gather evidence relating to the research questions, and give detail from data collection, the analysis of interview transcripts, observational notes and data from archival sources.

Chapter 3 argues that the pursuit of sustainable development in organisations has come to stay and that mining companies, especially in developing countries such as Ghana, can no longer
ignore the interests of sustainable development stakeholders. This argument sets out a review of literature covering what is already known about the concept of sustainable development, and the motivations for sustainable development practices. The chapter further discusses the meaning of accounting and explains various rationales of accounting practices in sustainable development initiatives of corporate organisations, notably, Stakeholder Theory as a theoretical framework used in this study. Drawing on extant literature, it places emphasis on accounting for sustainable development practices via external reporting and internal accounting practices.

Chapter 4 discusses the research context by presenting an overview of the global mining sector and how the mining sector is connected with sustainability. The chapter focuses on the contribution of the mining sector to Ghana’s socio-economic development, which comes with sustainable development challenges. The reasons for choosing Ghana for this study, Ghana’s geography, the history of the mining sector in the country, the structure of the mining industry, and an overview of the regulatory bodies are also part of this chapter. The profile of the case mining company used in this study also forms part of this chapter: Gold Fields Damang Mine is a subsidiary of Gold Fields Limited, a South African mining company with high reputation for sustainability. The chapter presents why Gold Fields Limited was chosen for this study, the global locations of Gold Fields Limited, as well as an overview of Gold Fields Damang Mine.

Chapter 5 presents the evidence and findings about sustainable development practices at the case mining company’s subsidiary from this study. The findings cover the identity of stakeholders of the case mining company and their understanding of sustainability, sustainability initiatives of the mining company and motivations for the mining company to practise sustainable development.
Chapter 6 discusses how accounting practices fit into sustainable development initiatives of the case mining company’s subsidiary. It goes on to draw inferences about the challenges of sustainable development in relation to Ghana’s mining sector and beyond.

Chapter 7 summarises and concludes the study as well as providing suggestions for practice and future research.

Figure 1.2 is a graphical representation of my research objectives and their connection with my research questions, the purpose of the thesis chapters as well as how my chapters are connected with each other and my research objectives and questions.

![Figure 1.2: The conceptual map](image-url)
Chapter 2: Research methodologies and methods

2.1. Introduction

This chapter expands and justifies the methodological approach I chose and explains how I went about conducting the study. I start in Section 2.2 by discussing the philosophical assumptions underpinning the study. More precisely, the section elaborates on how my philosophical assumptions informed my research strategy, research design and research approach. Then in Section 2.3 I provide details of carrying out study design, data collection and analysis, and interpretation of the analysis in stages, including how I used extant literature. Matters covered comprise the methods used to refine the research questions and to address these questions using a case study approach, including how access was gained to the mine in order to conduct fieldwork. I also go into issues of validity and ethical considerations. Finally, section 2.4 presents a summary of the chapter and how I have presented the results of my research in the rest of the thesis.

2.2. Research philosophy and approach

Research philosophies relate to the development of knowledge and the nature of knowledge and therefore embody significant assumptions about how researchers view the world (Saunders, Lewis & Thornhill, 2007). Burrell and Morgan (1979) confirm that social scientists differ in their approaches to research, their questions, and their methods of collecting, analysing and interpreting data because their views on, or stances they take about, ontology, epistemology and human nature differ. For the novice researcher in accounting or other social sciences, additional sources of difference arise as they grapple with appreciating the range of views, and so approaches, that are possible and crafting an approach that suits the topic of the research, in this case social, environmental and sustainability accounting.
According to Hyde (2000), in the acquisition of new knowledge in research, two main approaches used are deductive and inductive. Positivists associate themselves with deductive research, which is mainly based on quantitative methods, whereas interpretivists associate themselves with inductive research, predominantly based on qualitative methods (Bryman & Bell, 2007; Creswell & Clark, 2007). Strauss and Corbin (1998) define qualitative research as “any type of research that produces findings not arrived at by statistical procedures or other means of quantification” (pp. 10-11). Creswell (2007) also explains that “Qualitative research begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problems” (p. 21). In contrast, a deductive research approach starts with an established theory and, by testing hypotheses empirically, seeks to verify if the theory is generalisable or applicable to other specific instances. Quantitative approaches therefore collect so-called objective, quantifiable data that explain causal relationships between concepts and make generalisations about the population (Chua, 1986; Smith, 2017; Strauss & Corbin, 1998). Even though quantitative methods enhance the generalisation and the diffusion of produced knowledge through the use of valid and reliable measurement methods (Churchill, 1979), they lack the ability to render detailed explanations for meanings and processes involved (Creswell, Hanson, Clark Plano & Morales, 2007).

My study responds to recent calls in the accounting literature for more insights into the role of accounting and control in the sustainable development practices of corporate organisations (Arjaliès & Mundy, 2013; Gond et al., 2012; Albelda Pérez, Correa Ruiz & Carrasco Fenech, 2007; Lodhia & Hess, 2014; Schaltegger & Burritt, 2010). One of the aims of this thesis is to explore how accounting is perceived to be used and the role of the accountant in sustainability practices and sustainability performance.
As mentioned in chapter 1, my study applies notions associated with stakeholder theory, in particular that, like any company, Gold Fields has a variety of stakeholders and it is likely that they have different opinions about sustainable development practices and how accounting contributes to such practices. More to the point, I use a stakeholder theoretical lens to examine the perceptions of people associated with the company at its Damang operations about sustainable development initiatives and the role of accounting in sustainability. Stakeholder theory proposes that companies create externalities, which affect a broad range of stakeholders (Freeman & Reed, 1983). According to stakeholder theory “managers are not responsible only for maximizing shareholder value (while acting within the limits of the law) as shareholder agency theory provides, but also for taking into account the wellbeing of other parties affected by corporate decisions” (Cragg & Greenbaum, 2012, p. 319). How stakeholders are defined has consequences since it affects who and what counts (Mitchell, Agle & Wood, 1997). This clarification of my theoretical lens is important because theories pervade any research study, as Parker (2014) argues: theories in qualitative research recognise accounting as constructing organisational reality rather than reflecting some independently pre-existing external objective reality. Hence, the argument that theory and theoretical insights both inform empirical data collection and analysis and emerge from the process of qualitative data analysis.

These research objectives informed my choice of research philosophy and strategy, and why I chose qualitative methods for my study. By the time I ventured into the field to collect data, my ontological belief, in addressing the research questions, was aligned to the idea that “the social world external to individual cognition is made up of nothing more than names, concepts and labels which are used to structure reality” (Burrell & Morgan, 1979, p. 4). Thus, as foreshadowed in Chapter 1, the approach used in this study is based on the methodological view that the research and the researcher are inseparable, and so consistent with constructivism, as distinct from positivism (Creswell, 2017). As a social science, qualitative accounting
research explores how accounting influences everyday lives through understanding how accounting can have beneficial, and sometimes harmful effects (Baker & Hayes, 2004; Carnegie & Napier, 2010). Through understanding how accounting touches our everyday lives, we can appreciate how pivotal it is in serving the interests of businesses, other organisations and society at large (Parker, 2012). Thus, qualitative methods are more suitable than quantitative methods in situations like mine, where I want to understand how ideas claimed as being accounting affect sustainable development practices and to question the views commonly held on this matter by management, regulators, academics, employees and residents of communities close to the mines.

Thus, this study is an interpretive case study that gathers and examines data (Chua, 1986; Ryan et al., 2002; Scapens, 2004; Stringer, 2007) in order to ensure that “the final written report or presentation includes the voices of participants; the reflexivity of the researcher, and a complex description and interpretation of the problem, and it extends the literature or signals a call for action” (Creswell, 2007, p. 31). Based on my view on human nature, that human beings are totally “autonomous and free-willed” (Burrell & Morgan, 1979, p. 6) and creators of the phenomenon under study (Ryan, Scapens, & Theobold, 2002), I chose to take an interpretive approach to this study, meaning that I used a qualitative and grounded approach to data collection from the people and places mentioned above and in analysing and interpreting these data.

Gray and Milne (2015) note, particularly in relation to research in social, environmental and sustainability accounting, that “the criteria we choose are likely to depend, to a fair degree, upon the extent to which we address – and how we then answer – the broader question of ‘what are we for?’ ” (p. 52). I used an interpretive case study to gather and examine data (Chua, 1986; Ryan et al., 2002; Scapens, 2004; Stringer, 2007; Gray and Milne, 2015) on how accounting is
perceived to contribute to sustainability decision making of the Ghanaian Gold mining sector. This type of method has become increasingly common in the past three decades, and, indeed, is encouraged in accounting research to provide in-depth insights into organisations and their operating contexts (Lodhia & Hess, 2014). My approach is also in response to the idea that, while they may be useful to explain trends, commonalities and averages, quantitative methods lack the capacity that qualitative methods have to offer explanations for the meanings and the processes involved (Creswell & Creswell, 2017).

2.3. Research elements

Studies of social, environmental and sustainability accounting have over the years been conducted using a variety of the qualitative approaches covered by Denzin and Lincoln (2005) (e.g., case study, ethnography, grounded theory, clinical and narrative research), as well as more quantitative ones, as criticised by Gray and Milne (2015). The researcher follows the argument in support of ‘direct’ research in an organisational setting, with the notion that qualitative accounting research is imperative because it eliminates the abstractness of accounting numbers and demonstrates how accounting impacts on people and society (Dumay & Rooney, 2016; Mintzberg, 1979; Robson, 1992). In this thesis, an exploratory study on corporate websites was first conducted, although I realised that to get at the truth, I would need to analyse people’s opinions and behaviours by a case study. Figure 2.1 presents a chronology of how I went about my data collection and altered my approach in the study.
Figure 2.1: Data collection and analysis chronology

(Source: Author’s Construct, 2018)

Figure 2.1 also indicates the elements covered in turn in this chapter, starting with the exploratory work conducted in 2015. As indicated, this involved literature review and data collection and analysis, which were done largely side by side. However, I explain reviewing the literature first, covering what this meant for both the exploratory work and the rest of the
study. Then I go on to outline the document analysis and the components of the case study in the Damang Mine.

2.3.1. Literature review

A literature review is a description of the literature relevant to a particular field or topic. It gives an overview of what has been said, who the key writers are, what are the prevailing theories and hypotheses, what questions are being asked, and what methods and methodologies are appropriate and useful (Emerald Group Publishers, n.d.). A literature review provides a critical analysis of extant research and writing through summary, classification, comparison and evaluation (Bryman & Bell, 2007; Saunders et al., 2007). Researchers often identify research problems based on extensive literature review (Strasser & Bateman, 1984). This is because the literature review accomplishes several purposes: it shares with the reader the results of other studies that are closely related to the study being reported (Fraenkel & Wallen, 1990); it relates a study to the larger, ongoing dialogue in the literature about a topic, filling in gaps and extending prior studies (Marshall & Rossman, 1989); and it provides a framework for establishing the importance of the study, as well as a benchmark for comparing the results of a study with the other findings (Creswell, 2017).

This thesis aims to investigate the sustainability practices, the sustainability performance, the perceived significance of accounting to sustainable development and its related challenges in a mining company’s subsidiary operating in Ghana. In qualitative research, Race (2008) claim that “the concept of literature review is very much a plural rather than a singular one” (p. 487). In consonance with this argument, several literatures on the Ghanaian mining sector, sustainable development and sustainability accounting and reporting were reviewed in this research. Accounting literature (such as Adams & McNicholas, 2007; Bebbington and Gray, 2001; Bebbington & Larrinaga, 2014; Gond et al., 2012; Kaur & Lodhia, 2018; Momin, 2013;
Parker, 2000; Jasch, 2006; Schaltegger et al., 2013; Braendle & Kostyuk, 2007; Murguía & Böhling, 2013; Tschopp & Huefner, 2015) was consulted for definitions, purpose and contents of sustainability accounting and reporting. The debate on sustainability in general (such as Diouf & Boiral, 2017; Sierra-García, Zorio-Grima & García-Benau, 2015; Strand & Freeman, 2015; Roca & Searcy, 2012; Montiel & Delgado-Ceballos, 2014; Milne, 1996; Shaw, 2009; WCED, 2013) also provided background context to this study. These articles and several others were reviewed to compare previous findings of accounting and sustainability research in order to ensure that I had a thorough appreciation and understanding of accounting practices and sustainability research to date, to identify potential areas for further accounting and sustainability research, to critique existing findings and suggest further studies, as well as to allow me to establish my theoretical framework and methodological focus (Hart, 1998; Randolph, 2009).

The literature reviews facilitated in contextualising as well as justifying the thesis, framing the research questions being asked, and supporting the method selection and research strategies. The literature review search covered websites, books, annual reports of the case mining company, conference proceedings, professional and academic journals, industry reports, etc. The research portal Google Scholar was used to keep track of the flow of publications in connection with the concepts and theories I deemed pertinent to this study. Not all the literature I consulted and reviewed proved relevant to the work presented in this thesis. Hence the literature review took place in three stages. Stage one covered issues on sustainability and accounting in general and those relevant to this thesis were selected in the second and third stages. The literature which is relevant is summarised in chapters 3, 4 and 5. In these chapters, I cover the history of Ghana’s gold mining sector, issues on sustainable development and how it relates to the mining sector and rationales of accounting in sustainable development practices of companies respectively.
A major limitation of the literature review was citing the works of other scholars without actually experiencing the realities on the ground. In this regard, Ruttan (2004) claims that the reliance on extant studies, which may not be empirically true, could be misleading. To overcome this limitation, findings of this study were compared with similar previous studies carried out in Ghana and beyond.

2.3.2. Exploratory work: two pilot case studies

An approach common in the literature I reviewed is the analysis of the contents of written reports (e.g., Buhr & Freedman 2001; Carels, Maroun & Padia, 2013; Holland & Foo, 2003; Khlif, Hussainey & Achek, 2015; Kolk 2005; Mathews, 2004). In these studies, sustainability reports are assumed to be a reflection of sustainability practices. Consequently, I considered it important to examine what plant sites of mining companies in Ghana report externally, before going into any plant sites to witness the sustainable development practices they engaged in and how accounting practices fit into those sustainable development practices. Thus, the two pilot studies contributed in many ways to my study and informed my research questions (see section 1.4), by providing me insights on what sustainability practices reporters imply are taking place, and the most likely reasons why such practices would be undertaken by mining firm subsidiaries in Ghana.

Two pilot studies were conducted between June and November 2015 on a multinational firm operating in Ghana. Newmont Mining Company was founded in the United States (US) in 1916 as a holding company for private acquisitions in oil and gas, mining and minerals enterprises (Newmont Mining Company, 2015). Now headquartered in Denver, Newmont is the world's second largest gold miner in terms of output (4.85 million attributable ounces of gold in 2014), with approximately 28,000 employees and contractors operating in five continents (i.e., Australia, Ghana in Africa, Indonesia in Asia, the US in North America and Peru in South
America). The multinational mining firm has publicly traded on the New York Stock Exchange since 1940 and has spent a century primarily in the natural resources industry, mining gold, silver, lead, zinc, lithium copper, uranium, coal, nickel as well as developing oil and gas (Newmont Mining Company, 2015).

2.3.2.1. Pilot study 1

While evidence suggests that multinationals are increasingly establishing subsidiaries in emerging economies (Tihanyi, Griffith, & Russell, 2005; Yin & Jamali, 2016), there are doubts as to whether these subsidiaries operate sustainably. As sustainable development practices become ever more crucial to multinationals (Kolk, 2005; Perego & Kolk, 2012), it is vital that we understand how and why multinationals’ subsidiaries produce sustainability reports in developing countries. This motivated the first study on Newmont, to determine what sustainability information is reported in narrative, physical and monetary forms by two plant sites of the multinational mining firm operating in Ghana. It further compared and contrasted the sustainability reporting contents of the two plant sites with each other. It was found that even though both plants reported sustainability information, it was mostly in narratives. Quite a few sustainability physical measures were reported, especially by one site. There was limited information expressed in monetary measures on all dimensions of sustainability: social, environmental and economic. In addition, the plant sites vary in the contents and details of reports even though the websites had the same headings. These variation in contents and similarities in patterns were explained using Institutional isomorphism. (See reference list for link to full paper: Amoako, Lord and Dixon, 2015.)

2.3.2.2. Pilot study 2

The second pilot study extended the first study by looking at what is reported by Newmont’s largest plant sites on the five aforementioned continents. The dimensions of sustainability
reported from each site were identified by analysing disclosures; the disclosures analysed were based on elements in GRI (2015) guidelines and the United Nations Division for Sustainability Development (UNSD) (2001) framework. These dimensions were then compared and contrasted to bring attention to how institutional isomorphism influences variations in sustainability disclosures from one plant site to another and from the parent company. Similar to the first study, it was found that most of the reporting about sustainability matters comprised narratives, a few physical measures and very little financial information. Notwithstanding that the reports from all the plant sites used similar headings, the contents of the reports differed. The paper therefore recommended that accounting managers reporting on sustainability should develop matrices to raise the standard and comprehensiveness of reports for better practices. Furthermore, the paper draws attention to the need for researchers to get closer to the organisations under study in order to examine the reasons why there are disparities in sustainability reporting between plant sites belonging to one mining firm. Furthermore, it was recommended that further studies be conducted to find out why mining firms prepare sustainability reports, for whom they compile the reports, how the reports are used, and how sustainability reporting could be enhanced. (See reference list for citation of full paper: Amoako, Lord, & Dixon, 2017.) These questions form the basis for the rest of the work done for this thesis.

2.3.3. Case study design

A case study approach was adopted since case studies are usually used to explain the specific (Burrell & Morgan, 1979; Hudson & Ozanne, 1988; Ryan et al., 2002; Vaivio, 2008). The case study has become increasingly common and encouraged in accounting research as it provides rich insights into organisations and their operating contexts (Stringer, 2007). It is also a method which is more suitable when investigating research questions which aim to describe processes.
or explain certain phenomena (for research questions framed with the words “how” and “why”), when the researcher has no control over behavioural dimensions, and the research focusses on contemporary issues (Bryman & Bell, 2007; Yin, 2017). A case-based research method enables organisations to be understood within context and enables an in-depth understanding of processes and employee perceptions by obtaining information from multiple sources (Norris & O’Dwyer, 2004). Bryman and Bell (2015) perceive case studies to be subjective because researchers are usually expected to be closely involved in the organisation as well as with the respondents under study. Yin (2017) argues that a case study approach is recommended when it comes to theory refinement and in this study, it can serve to clarify debate around accounting roles in sustainability decision making. The case study in my situation enabled me ascertain how stakeholders perceive sustainability and how accounting functions as a facilitator of sustainable development practices of a mining company operating in Ghana.

2.3.4. Gaining access

In order to gain access to a research site, Buchanan, Boddy and McCalman (1988, p. 53) recommend that “the researcher should adopt an opportunistic approach to field work in organisations”, taking advantage of any possibilities and opportunities for access to an organisation. In this study, I have adopted the opportunistic approach of Buchanan et al. I wanted to use another mining company in Ghana as the case study, one with an established reputation for sustainability, by virtue of its inclusion on the Dow Jones Sustainability World Index, which is based on a rigorous analysis of corporate social, environmental and economic performance. That company has been included in the index every year since 2007. That mining company operates in the region where I have been working for six years, hence there is proximity and some acquaintance with their operations which I thought would facilitate my
research. In addition, I had a friend who was formerly a cost accountant and is now the head of the internal audit there. I had already conducted an unstructured telephone interview with him as to how to begin the process of gaining access. I was told to send an email to the head of accounting and finance or the human resource manager, stating my intentions for the study (see Appendix 1 for the letter asking for consent that was sent to both the initial company and later to Gold Fields). Unfortunately, even though I had used that company for my two pilot studies (Amoako et al., 2015; 2017), access was denied.

Whilst working on gaining access to the said mining company, I was also in touch with the Human Resource Manager of Gold Fields Limited, another mining firm in Ghana, as a back-up case study company. Gold Fields is equally a good company for this study because it is reported as having a good reputation for sustainability globally (Gold Fields, 2016). Gold Fields is listed on the Johannesburg and New York Stock Exchanges. It has been ranked the top South African mining company on the prestigious Dow Jones Sustainability Index benchmarking database, which is based on more than 2,100 companies across 59 industries and 42 different countries. The index considers financial, environmental, social and governance criteria (Robinson, Kleffner & Bertels, 2011). It is reported that from 2011-2016, Gold Fields has consistently been ranked between third and fifth in the mining sector on the Dow Jones Sustainability Index (Mining Review Africa, 2018). A contributing factor to this achievement is that it reports on sustainability in accordance with a number of voluntary initiatives, including the Carbon Disclosure Project, the United Nations Global Compact and the GRI (Reuters, 2018). Since 2010-2013, Gold Fields is reported to have scored A+ in the GRI rating and GRI 4 Core in 2015 and 2016 (Gold Fields, 2016). After sending a summary of my research proposal to Gold Fields (see Appendix 2), I received a positive response to my request for research access (see Appendix 3 for access approval). Section 4.4 presents the profile of Gold Fields Limited and its subsidiary (Damang Mine) which was used as a case for this study.
2.3.5. Data collection methods

In conducting qualitative studies, Kalof (2008) argues that “there is no right or wrong answer, but some methods will be better choices than others for particular research topics” (p. 103). Strauss and Corbin (1998) outline sources of data in qualitative studies: “data might consist of interviews and observations but also might include documents, films or videotapes, and even data that have been quantified for other purposes such as census data” (p. 11). In this study, I used competing perspectives from various stakeholders in Ghana’s mining sector in order to enhance validity and reliability (Krippendorff, 2004; 2011; McKinnon, 1988; Robson, 1993). The pilot studies discussed in section 2.3.1 gave me ideas of what to look out for when I went to collect data, by informing my methods and the themes that were to be used in the main study. To answer the research questions, four data collection procedures were used for this study: semi-structured interviews, observations, informal conversations, and content analysis (see Figure 2.1).

2.3.5.1. Semi-structured interviews

According to Marshall and Rossman (1999), qualitative research involving case studies uses interviews extensively. Sullivan (2001) claims that interview techniques are superior in capturing the most critical subjective meanings that are indispensable elements of understanding human behaviour. In line with the objective of this study, the interviews enabled me to gain insights into how accounting enhances sustainable development practices of the case mining company in Ghana.

Face-to-face semi-structured interviews were conducted to enable me to establish rapport with the interviewees in order to interpret verbal and non-verbal behaviour as well as to explain questions (Creswell, 2015). Myers (2013) posits that there is no such thing as an ideal number of interviews. Parker (2014) argues that data collection could be enough if the researcher
reaches data saturation. Data saturation is the point when there is adequate information to replicate the study (O’Reilly & Parker, 2013), when the ability to obtain additional new information has been reached, and when additional coding is no longer realistic (Fusch & Ness, 2015; Guest, Bunce, & Johnson, 2006).

Overall, the researcher interviewed 26 informants from seven groups: middle management, lower managers, employees (both residents and non-residents of nearby towns), academics, residents (not employed in Gold Fields), and regulators (Environmental Protection Agency Ghana employees and from the Ghana Police Service). See Table 2.1 for interviewees’ affiliations, codes, position and interview length. Managers were interviewed because one would expect that they form the core for decision making in the organisation. The other stakeholders were identified using a snowball approach: the researcher was able to access other external stakeholders he identified from what managers and employees told him and from his own personal contacts and acquaintances (Creswell, 2015; Myers, 2013; Teng & Faff, 2017). The interviews with management and employees were arranged through two middle level managers and a lower level manager. Each interview was audio-recorded (with permission) and they lasted for 28 to 86 minutes depending on how willing and able an informant was in providing relevant information on the questions asked. To achieve informed consent of participants, the purpose, nature, methods and intended use of the research were presented to each participant, assuring them of anonymity and confidentiality (Saunders et al., 2007, 2015). The interviews were held at the workplace for regulators, managers and employees. Interviews for residents were held at different places including homes, on the streets and in restaurants, depending on convenience. In order to guarantee the anonymity of the interview participants, I use pseudonyms in column two of Table 2.1 (such as Middle Manager 1-5, Lower Manager 1-4, Non-managerial employees 1-5, etc.).
Table 2.1: Stakeholder Affiliations, Position and Interview Length

<table>
<thead>
<tr>
<th>Affiliations</th>
<th>Interviewee code</th>
<th>Number of participants</th>
<th>Categories</th>
<th>Interview length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Phase 1</td>
<td>Phase 2</td>
<td></td>
</tr>
<tr>
<td>Gold Fields</td>
<td>Middle Manager</td>
<td>2</td>
<td>3</td>
<td>Middle managers</td>
</tr>
<tr>
<td>Gold Fields</td>
<td>Lower Manager</td>
<td>2</td>
<td>2</td>
<td>Lower managers</td>
</tr>
<tr>
<td>Gold Fields</td>
<td>Non-managerial employees</td>
<td>2</td>
<td>3</td>
<td>Non-managerial employees</td>
</tr>
<tr>
<td>Communities</td>
<td>Community residents</td>
<td>1</td>
<td>5</td>
<td>Five community residents and one community leader</td>
</tr>
<tr>
<td>Environmental Protection Agency, Ghana</td>
<td>Regulator</td>
<td>0</td>
<td>3</td>
<td>Two senior managers and one accountant</td>
</tr>
<tr>
<td>Ghana Police Service</td>
<td>Police</td>
<td>0</td>
<td>2</td>
<td>One senior and one junior officer</td>
</tr>
<tr>
<td>University of Energy and Mines, Takwa</td>
<td>Academic</td>
<td>0</td>
<td>1</td>
<td>An environmentalist</td>
</tr>
</tbody>
</table>

The interviews were carried out in two phases. The first phase took place in January and February 2016, intended to identify emergent themes. Two middle level managers, two lower level managers, two non-managerial employees including a cost accountant, and a community resident were interviewed (see Table 2.1). A site tour was also organised upon request of the researcher. I also visited some of the development projects done by Gold Fields for nearby communities. During the second phase in July and August 2016, I followed-up on issues which needed further clarification from some participants of the first phase and expanded my interviews to include three middle level managers, two lower level and three non-managerial employees, five residents from the communities near the mines, three administrators of regulatory bodies, two police officers at a police station and an academic (see Table 2.1). This enabled me to acquire a broader stakeholder perspective on issues related to the mines’ sustainable development practices and performance, the role of accounting in sustainable development practices, as well as challenges for sustainable development practices encountered by the mining firm.
Interview guides were used to focus upon initial themes of this study, maintaining consistency of themes across interviews (see Appendix 4 for interview guide). The interview guide was designed to gain interviewees’ views on various issues derived from the contextual analysis, the sustainability and accounting literature review and the two pilot studies (Amoako et al., 2015; 2017). Questions asked in the interviews comprised basic questions and probing questions (King & Horrocks, 2010; Roulston, 2010) to prompt further explanations and examples, as well as more detail (Silverman, 2016).

During the early part of the interviews in both phases one and two, I asked questions related to general information about the interviewee and on the sustainability activities of the mining company, as Spradley (1979) claims that such questions are useful in starting a research conversation. These questions covered how long the respondent has been with the firm, their roles in the organisation, general sustainable development, and positive contributions of Gold Fields Limited to community development. It is recommended that questions seeking the disclosure of sensitive information should be held back and asked during the latter stages of the interviews (Dalton, Daily & Wimbush, 1997; Spradley, 1979). Therefore, in consonance with the objectives of this study, I asked questions on sustainable development practices, sustainability performance, accounting’s role and involvement in sustainability and challenges in sustainable development practices in the later part of the interviews (see Appendix 4).

2.3.5.2. Archival sources of data

The technique of content analysis is used in this study to determine the extent to which the elements of sustainability performance are being reported online by the selected plants. Content analysis is a research method for analysing written, verbal or visual communication messages in order to build up a model, a conceptual system, a conceptual map or categories, or to describe the phenomenon under consideration (Bebbington et al., 2014; Krippendorff, 2011; Lodhia &
Hess, 2014). Parker (2005) found content analysis to be the dominant research method for collecting empirical evidence on accounting reporting.

Documents collected and analysed include annual reports of the case company, notices on corporate websites of the case company, and documents from the Environmental Protection Agency Ghana. I also obtained access to financial and non-financial environment information including, newsletters, periodicals, and 2015 analysts report and news articles on the company.

A directed approach to content analysis was applied, that is, starting with relevant research findings as guidance for initial codes (Hsieh & Shannon, 2005). In my case, where the research aim was to examine sustainability practices, the sustainability performance, related challenges and the perceived role of accounting in these practices, document analysis corroborated my interviews and enabled me to produce a rich description of my finding (Stake, 1995; Yin, 1994).

2.3.5.3. Informal Discussions

The concerns shown through informal chats with the informants including those who cancelled the series of arranged appointments, signified their high level of interest in the study. Baak (2016) and LeCompte (1999) regard gossip and informal chats over lunch as useful for building participant relationships and presenting the researcher as a confidant. I took the slightest opportunity to engage people, especially community residents and employees, in conversations relating to the research intentions and recorded these in the field notebook. Qualitative researchers perceive the recording of ethnographic data, such as impressions, hunches, feelings, chats and questions, to be a good technique to enrich interviews, focus groups and document analysis (Atkinson, 2017; Davison & Warren, 2017; Myers, 2009; Spradley, 1979; Pink, 2015).
2.3.5.4. Observations

Observations are an “attempt to observe and explain events within the context in which they occurred” (Lupton, 1963, p. 29). Observation in this context enabled me to witness (Sharpe, 2004) sustainability in action at the plant site and in towns close to Gold Fields Damang gold mine. During phases one and two of my data collection, I was able to observe: infrastructural projects initiated by Gold Fields for communities, informal conversations and behaviour of employees at the plant sites, active mining sites and pits, a tailings storage facility, renovated mine sites, notice boards, titles of files on shelves in offices, notes on individual notice boards in offices, certificates of environmental standard bodies like ISO, conversations between employees and officials on-site. In addition, I was shown budgets and sustainability reports by managers from their computer monitors. Even though some of these observations interrupted the interviews as some of them were conducted during working hours, relevant ones were added to the data collected.

As Myers (2009) suggests: “If you are writing a case study or ethnography of an organisation, a few photographs or even a video can bring your story to life” (p. 156). Consequently, the inclusion of such artefacts could bring meaning to the reader and connect the story to organisational actants for internal consumption (Nyame-Asiamah, 2013). In this regards, I was able to take a reasonable number of interesting photographs while carrying out observational activities which are added to other materials in the analysis sections (Chapter 5-6).

2.3.6. Data analysis and validity

This section presents how I went about analysing and interpreting the data I collected from the field work at Gold Fields Damang Mine. The section further explains how I ensured that the data collected was safely stored to protect participants’ anonymity and other ethical issues.
2.3.6.1. Data analysis

The semi-structured interviews with informants were recorded and transcribed by the researcher. In situations where respondents disallowed the researcher to record the interview, notes were taken (Marshall & Rossman, 1999; Nordstrom, 2015; Spradley, 2016). All the formal interviews were held in English and therefore did not require much translation. However, the informal interviews, which were mostly with residents of towns close to the mine, were conducted in Twi (the most spoken language in Ghana), and I translated relevant parts afterwards into English. To maintain confidentiality and preserve anonymity (Saunders et al., 2007), I saved information such as transcriptions and recordings in a locked cabinet and on a password-protected computer disk with back up on the University of Canterbury’s server in accordance with the provisions of the Human Ethics Committee’s approval (see appendix 5).

On the matters of analysis and interpretation, Lincoln and Guba (1985) explain that multiple realities are contextual, meaning it is not possible to form universal interpretations in terms of absolute realities. Thus, epistemology is socially constructed rather than being objectively determined (Burrell & Morgan, 1979; Chua, 1986; Carson, Gilmore, Perry & Gronhaug, 2001) and perceived (Hirschman, 1985). I conducted a thematic analysis of observational notes, documents and archival data and transcribed interviews (Alhojailan, 2012; Braun & Clarke, 2006; Bryman & Bell, 2007). Thus, in analysing the data from this study, core common themes were identified and explained to provide evidence to support or refute theoretical and literature categorisations as well as to add new theoretical categories (Campbell & Ahrens, 1998; Rowe & Guthrie, 2010). Braun and Clarke (2006) define thematic analysis as “a method for identifying, analysing and reporting patterns (themes) within data” (p. 79). In my case, the advantages of using thematic analysis are consistent with the argument of its flexibility, relative
ease to learn and do, as well as its accessibility to beginners in research (Alhojailan, 2012; Braun & Clarke, 2006; Froehlich, Hoegl & Weiss, 2015; Hayes, 1997).

2.3.6.2. Validity and credibility

In analysing research data to ensure credibility and dependability, Doorasamy and Garbharran (2015) state that several procedures can assist the researcher. To ensure validity and credibility, I used multiple data sources, documented the data collection procedure, sent the transcribed interviews to interviewees for review and feedback, and considered ethical issues. The following paragraphs explain the validity and credibility methods mentioned in detail.

The researcher used multiple sources of data to provide a holistic perspective on the phenomenon being investigated. According to some authors, using multiple sources of data to find corroborating evidence minimises data interpretation bias, since confirmation for claims can be linked to data findings from various sources (Creswell, 2015; Bryman & Bell, 2015). The researcher found that there were situation of not only consistencies but also conflicts of data from different sources as one would expect. These conflicting findings were also reported, as Stuwig and Stead (2013) state that conflicting findings should be used to view an issue from a new perspective and to broaden the interpretation of the data. Thus collection of data using a multi-method approach is unlikely to result in convergence. Basing one’s understanding of a situation on any one set of data cannot always be avoided, but Taylor-Powell & Renner (2003) warn that this needs to be done with a lot of care (Gillham, 2010).

The researcher documented in a systematic manner the data collection and analysis activities, pointing out the sources of data and the methods used for their collection, and for data management and analysis (Taylor-Powell & Renner, 2003; Saunders et al, 2003). Further reflective notes were made within 24 hours of each interview, before they were forgotten.
As indicated earlier in this chapter, taped interviews were transcribed and reviewed by the researcher who listened directly to each recorded interview, as recommended by O’Dwyer (2004). All transcriptions from audio-recordings were sent to the relevant interviewee for confirmation and further points (Chua, 1998). Interview notes and transcripts were confirmed by interviewees, who reviewed them with the interviewer during the latter’s phase two data collection stage. In the situation of illiterate community residents, contents of the transcript from phase one data collection were discussed with them during phase two data collection and phase two transcripts were also discussed via phone calls.

As recommended by Bryman and Bell (2011), a researcher has to ensure he is acting ethically during all the different stages of the research process so that the authenticity of his work cannot be questioned. In this study, I made sure that the consent to participate was obtained from informants in return for the promise of respect for their privacy of informants, protection from jeopardy, if any, and that I would not deceive them while doing the research (see Appendix 6 for participants’ information sheet). Aside from this, I also had to prevent plagiarism issues, as I was using a large set of secondary sources such as articles, websites information, books, pilot studies, and annual reports in my thesis. Most of the sources I used came from the internet and were extracted from the University of Canterbury’s library database and other search engines, mainly, Google scholar, which is considered a reliable tool. Hence, the information I used is regarded as genuine, valuable and renders my thesis credible. For the integrity of my thesis, I confirm that all the secondary sources I used have been cited and referenced properly using APA referencing style.

2.4. Chapter Summary

This chapter discussed the methodology and explained the methods I used to gather the information required. The findings of the two pilot studies are also discussed. Various sources
of data, consisting of interviews, observations, and documentary evidence were used in this study. The research design used purely inductive research methods and rigorous efforts were made to ensure that the interview guide and analysis of data were valid and credible.

In the accounting literature, prior studies on how companies carry out sustainable development have not widely used qualitative research methods. Thus, this research extends these studies by combining the literature review, content analysis, theory, observations and interviews in a case study.

The chapter detailed how the analysis of collected data was conducted thematically. This sets the scene for chapters three and four which provide a review of the literature on sustainable development, the role of accounting in sustainability and stakeholder theory and how I have presented the results of my research in the rest of the thesis. Findings will be presented in chapters five and six.
Chapter 3: Sustainable development, corporate motivations and accounting

3.1. Introduction

This chapter mostly comprises a literature review. As explained in Chapter 2, literature reviews offer researchers insights about what is being researched, to become familiar with data sources, findings, theories, etc. of other researchers, and to gauge the position of existing knowledge in order that they can add to it. Recently, greater recognition has been given to the scope of sustainable development practices and how such practices are allied to accounting in meeting stakeholder demands as explained by stakeholder theory. In the accounting discipline, the contributions to sustainable development are in two main forms: external reporting and the engagement of accounting with sustainable development through accounting practices (such as full cost accounting, environmental cost management, material flow cost accounting, life cycle costing, environmental capital appraisal, and environmental corporate performance evaluation). This chapter presents the conceptual framework, covering stakeholder theory as the theoretical framework, as well as the rationales for accounting in sustainable development practices.

I start the chapter by outlining in section 3.2 what stakeholder theory is about and the rationales for choosing this theory for this study, by demonstrating how it is connected to sustainability and accounting practices. Section 3.3 outlines some broad ideas about the concepts of sustainability and sustainable development, including their business rationales. The discussion brings out how broad these concepts have become and how they are open to a multiplicity of interpretations. Section 3.4 outlines the shape and scope of sustainable development, bringing in the three dimensions of sustainability (i.e., social, environmental and economic) referred to in earlier chapters. Section 3.5 examines the motivations of corporate organisations in general
and mining companies in particular when it comes to communicating about sustainability and performing sustainable development practices. Section 3.6 identifies sustainability performance indicators. Section 3.7 defines accounting and examines the rationales for accounting practices in organisations as well as connecting accounting with sustainable development practices. Section 3.8 elaborates on what goes into sustainability reporting, sustainability reporting indices, the status of sustainability reporting among corporate organisations and sustainability reporting in the mining sector. Section 3.9 examines the interplay between accounting practices, management control, and sustainability as well as related literature. Section 3.10 offers a summary of the chapter.

3.2. Stakeholder theory

That organisations have stakeholders is an idea widely referred to in previous sections of this chapter. Moreover, in chapters 1 and 2, I noted that the main aim of this study is to explore the sustainability practices, sustainability performance, related challenges and the perceived significance of accounting to sustainability through a stakeholder theoretical lens.

In this chapter, I present in Figure 3.1 a graphical representation of the conceptual framework for this study, showing the connections between stakeholder theory, accounting practices and sustainability practices. As depicted in Figure 3.1, stakeholder theory can be connected to sustainability and accounting practices.

Sustainability practices, as mentioned earlier, have three dimensions, social, environmental and economic, which are affected by both motivations and challenges. Thus, whilst there are several reasons why corporations may be encouraged to embark on sustainable development initiatives, on the other hand there are factors that impede and challenge such practices (see Figure 3.1). These motivations and challenges have been established in the literature to be
connected to stakeholder theory (e.g., AccountAbility, 2015; Gualandris, Klassen, Vachon & Kalchschmidt, 2015; Kaur & Lodhia, 2018; Rinaldi et al., 2014).

As mentioned in the introductory chapter, accounting’s domain affords primacy to a notion of the stakeholder interest that extends beyond the needs of capital providers in discussions of accounting and reporting, through examining and seeking to design reporting and managerial controls that address issues of stewardship of corporate sustainability (Harte & Owen, 1987; Owen, 1990). Thus, the contribution of accounting to sustainable development has two phases: external reporting; and internal management accounting and control practices. Both the external reporting and the managerial accounting and control domains of accounting provide information that seeks to gain legitimation by stakeholders (Fonseca et al., 2014; Jenkins & Yakovleva, 2006; Momin, 2013; O'Dwyer & Unerman, 2016), hence the influence of stakeholder theory (see Figure 3.1). The role of accounting in sustainability is therefore aimed at providing information on the social, environmental and economic harms, benefits and costs. When these elements have been identified, resulting in changes in practices and policies, they can lead to sustainable livelihood and environmental protection (see Figure 3.1). The rest of this chapter explains the framework in detail.
Figure 3.1 Conceptual framework of sustainable development practices and accounting
Stakeholder theory proposes that companies create externalities, which affect a broad range of stakeholders (Freeman & Reed, 1983). According to stakeholder theory “managers are not responsible only for maximizing shareholder value (while acting within the limits of the law) as shareholder agency theory provides, but also for taking into account the wellbeing of other parties affected by corporate decisions” (Cragg & Greenbaum, 2012, p. 319). How stakeholders are defined has consequences since it affects who and what counts (Mitchell, Agle & Wood, 1997). Proponents of stakeholder theory differ among themselves about who is a stakeholder: whether any party affected by or concerned with an organisation's activities counts as a stakeholder (Cragg & Greenbaum, 2002), or only those parties “who bear some form of risk in the outcome of the firm” (Clarkson, 1996, p. 9). Nonetheless, stakeholders are widely defined as “those groups without whose support the organization would cease to exist” (Freeman & Reed, 1983, p. 89).

Stakeholder theorists categorise it into two branches, namely, an ethical (normative) branch and a positive (managerial) branch (Donaldson and Preston, 1995). The ethical branch of stakeholder theory argues that stakeholders are those who have the right to be treated fairly by an organisation (Phillips, 2003). In the ethical branch, issues of stakeholder power are not directly relevant and it is held that management should manage the organisation for the benefit of all stakeholders (Donaldson and Preston 1995). Thus, the ethical branch of stakeholder theory presumes that for an organisation to survive, there must be an interdependent relationship between the organisation and its stakeholders. As such managers are responsible for maintaining this cordial relationship for the organisation’s success (Islam 2009, Donaldson and Preston 1995). As such, information rights for all stakeholders are critical to developing a more pluralistic setting (Bebbington & Larrinaga, 2014).
The managerial branch of stakeholder theory is more organisation-centred and attempts to explain that management is likely to focus on the expectations of particular (powerful) stakeholders (Deegan, 2000; Gray et al., 1995). This implies that the level of interest an organisation will have in a stakeholder is dependent on the extent to which an organisation believes such a relationship needs to be managed in the interests of the organisation (Neu, Warsame and Pedwell, 1998). Therefore, the managerial branch recognises that stakeholder definition requires a scope around which stakeholders’ rights might be determined (Xenias & Whitmarsh, 2013; Stern et al., 2014) and how stakeholders make their impact felt and the organisational response to stakeholder needs is usually determined by their relative power to affect the entity in question (see Mitchell et al., 1997). Cragg and Greenbaum (2002) claim that “the extent and the circumstances under which a company will recognize and act on its putative responsibilities to its putative stakeholders is a function of innumerable day to day managerial decisions” (p. 320). These decisions, according to Cragg and Greenbaum are ethical, expressing and putting into consideration individual and institutional values. Eden and Ackermann (1998) identify stakeholders as “people or small groups with the power to respond to, negotiate with, and change the strategic future of the organization” (p. 117).

I take the same stand as many social accounting scholars that support the normative perspective on stakeholders (Adams & Larrinaga-González, 2007; Thomson & Bebbington, 2005; Hossain and Alam, 2016; Hossain et al., 2016; Belal & Roberts, 2010; Gray et al., 1997; O'Dwyer, Unerman, & Hession, 2005; Cooper, & Owen, 2007; Unerman and Bennett, 2004). Along with Donaldson & Preston (1995), I believe that a complete reliance on the perceptions of corporate stewards creates a gap in our understanding of stakeholder expectations (Choi & Shepherd, 2005; Frooman, 1999). Although the extant literature on stakeholder theory has improved our appreciation of the perceptions of resource acquirers, limited studies have focused on the perceptions of the resource providers (Choi & Shepherd, 2005; Neville, Bell & Whitwell,
Examining how each stakeholder group, such as managers, non-managerial employees, community residents and regulators, perceive sustainability and accounting, and looking at variations between groups can help corporations determine how accounting practices and policies on sustainability contribute towards organisational and societal welfare. By adopting a stakeholder-based perception, findings from this study could complement the responsibility-based view (Glavas & Godwin, 2013) of accounting as it captures how various advocate groups perceive the connection between accounting and sustainability (Rupp, Ganapathi, Aguilera & Williams, 2006; O'Dwyer et al., 2005).

In the mining sector, some authors have listed a large number of stakeholder groups: employees, consumers, managers, shareholders, board members, suppliers, buyers, industry chambers, government officials, ‘business clubs’, local communities, trade-unions, distributors, insurance companies, judges and courts, legislators, regulators, enforcement bodies, consultants, media, opinion-makers, non-governmental organisations, civil society, the church and vulnerable groups (Eden & Ackermann, 1998; Freeman & Reed, 1983; Zakhem, 2008). Stakeholder theory presumes that managers must keep both shareholders’ and stakeholders’ interests in mind when implementing new strategies (e.g. Freeman, 1984; Harrison & Freeman, 1999).

3.2.1. Categories of stakeholders

Stakeholders may be categorised as either primary or secondary. Primary stakeholders are those without whose support an organisation cannot survive (i.e., supply chain partners). Thus individuals and groups whose lives are most affected by the firms activities are considered the primary stakeholders (Unruh, 2005; Witkin & Altschuld, 1995). Mitchell et al. (1997) identify primary stakeholders as being typically large clients, suppliers, shareholders, and employees. These categories of stakeholders receive the bulk of the company's attention simply because
the company requires the resources they provide in order to survive. Primary stakeholders who have the most power, legitimacy, and urgency of demands on the organisation are most likely to attract senior management attention (Jurgens, Berthon, Edelman & Pitt, 2016).

Secondary stakeholders are those affected by a firm yet not engaged in the firm’s daily operations (Castka & Prajogo, 2013; Clarkson, 1995). Secondary stakeholders are individuals who provide programme services or are involved in the decision-making process for programme implementation (Witkin & Altschuld, 1995). Secondary stakeholders such as consumer groups, communities, special interest groups, individuals, and the public may struggle mightily to be heard, often to no avail (Frooman, 1999).

However, Jurgens et al. (2016) note that managers should pay equal attention to secondary stakeholders because secondary stakeholders are becoming more influential by providing senior management with a check on the powerful voices of primary stakeholders. “They also act as watchdogs, providing insight into the behaviours and practices of some of the less accessible parts of the organization” (p. 130). For the purpose of this study, the stakeholders will be categorised as primary and secondary stakeholders.

Be they secondary or primary, stakeholders are either internal or external to a company. External stakeholders are those outside the company such as suppliers, customers, governments, competitors, civil society organisations, and the local community. Internal stakeholders refer to those within the company, such as employees and shareholders (Harrison, Bosse, & Phillips, 2010; Laplume, Sonpar, & Litz, 2008).

In the mining sector, internal stakeholders include management and employees. External stakeholders include communities close to the mine, suppliers, industry associations such as the International Council for Mining and Metals, government agencies and departments such as regulators (Hilson & Murck, 2000; Prno & Slocombe, 2012). The management of
multinational mining companies are oriented towards continual cooperation with not only internal stakeholders but also external local, national and global stakeholders (Blomback & Wigren, 2009). In order for the management to obtain benefits through the differentiation achieved by a greater level of sustainability, sustainable development activities have to be adequately carried out in accordance with both internal and external stakeholders’ expectations (Amoako et al., 2016; Barić, 2017), as an individual can be part of more than one stakeholder group (Freeman, 1984; Öberseder, Schlegelmilch & Murphy, 2013).

3.2.2. Why stakeholder theory?

This thesis uses the broader perspective of stakeholder theory, as socially-responsible companies’ interactions are not limited to shareholders, customers and employees. Participation of all types of stakeholder has been perceived as key in achieving sustainable development by organisations (Gidson, 2012; Holden, Linnerud, & Banister, 2017).

Many companies have embraced stakeholder management to address their externalities and it has been claimed that stakeholders’ pressure has steered a widespread adoption of sustainable development practices (Castka & Prajogo, 2012; Sarkis, Gonzalez-Torre & Adenso-Diaz, 2010). Stakeholder participation has been regarded as a means of addressing both the primary dimensions of sustainable development by enabling companies to identify, understand and respond to the sustainability issues and concerns and to report, explain and be answerable to stakeholders for decisions, actions and performance (AccountAbility, 2015; Gualandris et al., 2015; Kaur & Lodhia, 2018; Rinaldi et al., 2014) by promoting public participation (Bäckstrand, 2006). Thus, according to Campbell (2007), the fundamental purpose of stakeholder theory is to identify “whether and why companies attend to the interests of stakeholders along with their own immediate corporate interests” (p. 949). Therefore, stakeholder engagement has been identified as a crucial success factor in sustainable
development attempts made by organisations (Kaur & Lodhia, 2018). AccountAbility (2015) argues that:

Stakeholder engagement is the process used by an organisation to engage relevant stakeholders for a clear purpose to achieve accepted outcomes. It is now also recognised as a fundamental accountability mechanism, since it obliges an organisation to involve stakeholders in identifying, understanding and responding to sustainability issues and concerns, and to report, explain and be answerable to stakeholders for decisions, actions and performance (p. 5).

However, extant studies (e.g., Frost et al., 2012; Lingenfelder & Thomas, 2011; Kaur & Lodhia, 2018; Momin & Shaoul, 2004) have reported that the role of stakeholder engagement has been questionable in various aspects of sustainable development practices and sustainability reporting.

Stakeholder proximity, that is, the spatial nearness of stakeholders to the firm (Driscoll & Starik, 2004), implies a high level of involvement in a firm’s processes, allowing for better insights into them and in turn may lead to stakeholder satisfaction. It is also claimed that conflicts of interest in a firm might be framed as tensions between insiders and outsiders (Bøhren, Josefsen & Steen, 2012). Thus, the firm’s resources are controlled and managed by the internal stakeholders, who might lack the will to abstain from making self-serving decisions at the external stakeholders’ expense (Jensen and Meckling, 1976; La Porta et al., 1997). Also each stakeholder category perceives sustainable development practices and performance according to the stakeholder’s own demands and interests (Fiedler & Kirchgeorg, 2007; Hillenbrand & Money, 2007).

In the case of multinational companies, management is exposed to stakeholder pressures in each country where they operate (Kostova, 1999; Meyer, Ding, Li, & Zhang, 2018; Xu &
Shenkar, 2002). Thus while making efforts in aligning with the parent’s global values, institutional pressures from host countries have to be accommodated (Kostova & Roth, 2002; Kostova, Roth & Dacin, 2008; Meyer et al., 2018; Westney, 1993). Such legitimacy can be enhanced by foreign stakeholders, particularly investors, aligning their organisational practices to local stakeholder expectations and regulations (Kostova & Roth, 2002; Meyer & Thein, 2014).

Starik and Kanashiro (2013) demonstrate that conflicting demands arise from diverse stakeholders with paradoxical demands. For instance, in the mining sector, whilst regulators endeavour to curb unsustainable corporate operations, communities close the mine may focus more on community development which in turn puts pressure on companies’ profitability, as, whilst striving to maintain good economic performance, companies endeavour to show how responsible their operations are. Hörisch, Freeman and Schaltegger (2014) claim that “The necessity to overcome trade-offs and conflicts is exactly what stakeholder theory is about in the social context of a business” (p. 334). This could be attained by addressing potential conflicts of money making and ethical responsibilities by creating mutual interests among the expectations of all relevant stakeholders (Freeman et al., 2010).

Nevertheless, Rowley and Moldoveanu (2003) observed that stakeholders can work in partnership to form powerful groups such as environmental activist groups, employee unions, community development committees, etc. These groups are formed because of a common interest and identity (Barnieh, 2015), and they may influence a company’s operations if they are dissatisfied. Collaboration between stakeholders may support measures towards more responsible and sustainable development practices (Murray, Haynes & Hudson, 2010).

Based on the perceptions of stakeholders on how sustainably a multinational company is operating, stakeholders can heavily penalise or highly elevate companies (Sen & Bhattacharya,
Wood and Jones (1995) point out the various roles stakeholders play. Firstly, stakeholders are the source of expectations for a company’s performance. Secondly, they experience the effects of companies’ activities and, thirdly, they evaluate companies’ outcomes in terms of stakeholder expectations and the effects on them.

Several studies focus on how stakeholders impact firms’ sustainability performance (e.g., Barnett & Salomon, 2012; Hörisch et al., 2014; Kassinis & Vafeas, 2006; Neubaum & Zahra, 2006). Kassinis and Vafeas (2006) found a positive relationship between community stakeholder pressures and environmental performance at the plant level. Neubaum and Zahra (2006) examined how some characteristics of institutional investors (key stakeholders) affect the relationship between institutional ownership and corporate social performance. Neubaum and Zahra established that long-term institutional ownership relates positively with corporate governance and corporate social performance. Other studies have investigated how companies are actually managed, specifically to identify key stakeholders and their expectations on sustainability (such as Agle, Mitchell, & Sonnenfeld, 1999; Jawahar & McLaughlin, 2001; Sangle & Ram Babu, 2007). These studies show that at any given time in the life of an organisation, certain stakeholders, because of their potential to satisfy critical organisational needs, will be more important than others and the level of stakeholder importance to an organisation evolves from one stage to the next. Other studies (such as Berman, Wicks, Kotha & Jones, 1999; Mathur, Price, & Austin, 2008) have established that stakeholder management has a linear relationship with the achievement of primary corporate objectives (e.g., revenue increases) or related aims such as social capital, and capturing knowledge.

Other studies have found that environmental issues are often perceived to be technical and that many people who should participate in these endeavours tend to be unwilling, unable or entirely excluded from the negotiation process (Appiah-Opoku, 2001; Bawole, 2013). In this regard,
Park (2016) recommends, “MNCs [multinational corporations] should attempt to meet social, environmental, and economic demands from local stakeholders in the globalisation era” (p. 8).

Companies in the extractive industries, particularly those involved in mining, are under intense pressure and scrutiny from a number of societal forces (Kapelus, 2002; Warhurst & Mitchell, 2000). At the same time, sustainable development in the mining sector has also undergone notable shifts, largely aimed at improving the environmental and social performance of the sector (Pro & Slocombe, 2012). These shifts have broadened the range of stakeholders, with civil society and market actors now regularly sharing sustainable development duties with the state (Ballard & Banks, 2003; Fonseca et al., 2014; Lemos & Agrawal, 2006). In resolving such tensions, the mining industry requires not only a company perspective but also stakeholder perspectives (Mzembe & Meaton, 2014) on the scope and meaning of sustainability. The mining sector has been actively innovating in addressing the various challenges of their operations more proactively, such as in developing sustainability reporting and promoting community development projects (Jenkins & Yakovleva, 2006).

Calvano (2008) claims that the expectation gap in stakeholder perceptions is one of the elements that leads to conflicts between companies and stakeholders. Nevertheless, Viveros (2016) points out that “to date, an understanding of CSR [corporate social responsibility] through stakeholder perceptions of it remains fertile terrain” (p. 51). Similarly, Momin (2013) argues:

> Many prior studies have looked at CSD [Corporate Social Disclosure] practice from the managerial perspective, while providing less of an insight into non-managerial stakeholder perspectives. Several researchers have argued that the social and environmental accounting literature needs to incorporate the voice of non-managerial stakeholders in CSD development (p. 150)
Thus, despite the crucial role of stakeholders in sustainability assessment, sustainability literature has not much explored stakeholder perceptions on the sustainability performance of multinational companies’ subsidiaries, with particular reference to emerging economies (Lodhia & Hess, 2014; Momin, 2013; Momin & Hossain, 2011). Hence, more research into how stakeholders perceive sustainable development practices is required is in order to address their necessities and claims in a tailored way (Jenkins, 2004; Kemp, 2010).

3.3. The concept of sustainable development: a multiplicity of interpretations

Sustainable development has to do with economic viability, social responsibility and environmental responsibility, as indicated already in previous chapters. The idea has gained so many facets that some authors have argued that a general widely accepted definition of sustainable development is necessary. This would establish a mutual language and understanding for such a crucial and commonly used concept that interested parties could use, such as academics, managers, and policy makers (Nikolaou and Evangelinos, 2008). In contrast, Fonseca (2010) claims:

This argument is somewhat naïve in its search for consensus over the meaning of an evolving construct that spans several ethical imperatives across several social groups. Some degree of variation in the meaning of Sustainable development is not only acceptable, but inevitable (p. 57).

Notwithstanding this state of affairs in which various definitions compete to be most accepted (Fonseca, 2010; Roca & Searcy, 2012), the WCED definition already given in Section 1.2 seems to be the one most cited (see Alnafa, 2014). This characterises it as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 43).
In contrast to WCED's broad definition, which integrates social, environmental and economic issues to do with sustainable development, management scholars, largely concerned with organisational contexts, originally used the term corporate sustainability to refer to organisational survival in strictly financial terms (Baumol, Bailey & Willig, 1977; Dierick & Cool, 1989). Separate from this, ideas did develop around sustainable development. Thus, for example, the idea of good corporate environmental and social behaviour dates back nearly half a century (see, e.g., Baumol, 1970; Davis, 1973; Hart, 1995; Wallich & McGowan, 1970; World Business Council for Sustainable Development (WBCSD), 2002). Gradually, these economic and social and environmental concerns have, at least in some minds, become less separate or have even fused. Thus, for example, in accounting, whereas the economic was, and still is, dominant, first environmental and then social concerns emerged as important, at least in the research (e.g., see Mathews, 1997; Gray, Dillard & Spence, 2009), and moves towards integration of the three are occupying some minds at least (see Adams, 2015).

Sustainability reports by companies are often associated with accounting, which has a long association with financial reports, annual reports, etc. published by these organisations. Sustainability reports have accompanied greater usage of the term sustainable development in such organisational contexts (Carroll & Buchholtz, 2014; KPMG, 2015), and would seem to signal an increase in sustainable development-related behaviours within them. These behaviours have been accompanied, at least according to Sharma and Henriques (2005), by the evolvement of strategic management principles of sustained competitive advantage, converging with organisational research on corporate social responsibility, ecological economics and environmental management, giving rise to a new understanding of sustainable development emerging. Thus, perspectives taken by management, accounting and business school academics now incorporate more than merely continued financial success (Carroll & Buchholtz, 2014; Engert, Rauter & Baumgartner, 2016; Sharma & Henriques, 2005; Montiel
& Delgado-Ceballos, 2014). An interesting aspect of this change is the inclusion of the notion of stakeholders in defining sustainable development, including by Dyllick and Hockerts (2002). That is, sustainable development is the idea of “meeting the needs of a firm's direct and indirect stakeholders […], without compromising its ability to meet the needs of future stakeholders as well” (p. 13). In this context, stakeholders are individuals and groups affected by or who influence an organisation – employees, society, customers, suppliers and government (Freemann, 1984; Alnafea, 2014); these are stakeholders who have a critical impact on an organisation's long-term sustainability (Elkington, 1997).

3.4. Sustainable development dimensions

As alluded to above in citing Adams (2015), some accounting authors also associate sustainable development with corporate practices which focus on integrating the systematic management of the environmental and social dimensions of business with the economic dimensions, in order to achieve sustainable development of the wider economy and society (Bebbington & Larrinaga, 2014; Hopwood, Unerman & Fries, 2010; Milne and Gray, 2013; Schaltegger & Burritt, 2005; Setia, Abhayawansa, Joshi, & Huynh, 2015). Adding the ecological dimensions of sustainability to these definitions, Elkington (1999) explains that sustainable development encompasses the three main dimensions referred to several times already.

An increasingly familiar way for these ideas to be operationalised is applying the concept of a Triple Bottom Line (TBL) mentioned in Section 1.1 and Figure 3.1 (Vallance, Perkins & Dixon, 2011); that is, elements making up the three dimensions of sustainability give rise to three so-called bottom lines, the term bottom line having become common parlance in the US in the 19th century for profit shown at the bottom of a profit and loss statement, or more generally for the total of an invoice or other financial account, and so for companies to only have one, economic, bottom line. According to Elkington (2013) “The TBL agenda focusses
companies not just on the economic value that they add, but also on the environmental and social value that they add – or destroy” (p. 3). The Chartered Institute of Management Accountants (CIMA), a professional body for managerial accountants, has been prominent in pushing this agenda, and so the term Triple Bottom Line has gained credence in the accounting profession. Figure 3.2 is from CIMA (2013). The next four sections look more closely at the ideas on which the figure is based.

![Figure 3.2: The sustainability dimensions](Source: CIMA, 2013, p. 2)

### 3.3.2. Sustainability and social progress

For people at the corporate level, sustainability includes the effect of their company’s operations on the external environment, now and in the future (Aras & Crowther, 2009; Tai & Chuang, 2014). Pullman et al. (2009) argue that social sustainability focusses on both internal communities (i.e., employees) and external ones (e.g., people living the company). To achieve social sustainability, organisations and manufacturing plants must provide equitable opportunities, promote connectedness within and outside the community, encourage diversity,
ensure the quality of life and provide democratic processes and accountable governance structures (Elkington, 1994; 2013). That is, the social dimensions of sustainability are concerned with human well-being, how to attend to human needs and to increase the opportunities of development equally for all; social sustainability is about equity and quality of life (Edinger-Schons, Lengler-Graiff, Scheidler & Wieseke, 2018). Companies, including those in mining, need to cope with the increasing social pressure from employees and society (Ekins & Vanner, 2007) at the same time as being both economically and environmentally conscious. See Appendix 7 on what could be measured under the social dimensions of sustainability.

3.3.1. Environmental stewardship and ecologic sustainability

For Prescott-Allen (2001), the environmental dimension encompasses ecosystem wellbeing, which is a “condition in which the ecosystem maintains diversity and quality, its capacity to support all life, and its potential to adapt to change to provide future options” (p. 7). According to Moldan, Janoušková and Háč (2012), environmental sustainability evolved from terms such as “environmental responsible development”, a term used by the World Bank in 1992, and then “environmentally sustainable development” (Goodland, 1995; Serageldin & Streeter, 1993). They add that protecting the sources of raw materials for human needs and welfare is a major part of environmental sustainability.

The environmental sustainability concept was explained by the Organisation for Economic Co-operation and Development (OECD) Environmental Strategy for the First Decade of the 21st Century (OECD, 2001) as having four elements for environmental sustainability: regeneration (resources which are renewable being used in an efficient way and not exceed their natural regeneration rates), substitutability (non-renewable resources being substituted with renewable resources or other forms of capital when they have been efficiently used to a certain limit),
assimilation (releases of pollution or similar substances not exceeding their given capacity) and avoiding irreversibility (preventing pollution or similar substances which can cause environmental damage which cannot be restored) (Moldan et al., 2012, p. 6).

In the mining sector, environmental sustainability usually involves issues such as pollution reduction, waste reduction, pollution prevention, energy efficiency, a decrease in the consumption of hazardous materials, a decrease in the frequency of environmental accidents, waste and emissions minimization to reduce operational costs and the development of clean mining technology competencies and new processes to optimise reputation and legitimacy, and minimise land disturbance and waste production (de Villiers & Alexander, 2014; Fonseca et al., 2014; Gimenez Sierra & Rodon, 2012). See Appendix 7 for more detail on what falls under the ecological dimensions of sustainability (GRI, 2015).

3.3.3. Economic growth and economic sustainability

Economic sustainability is usually well understood, at least according to Gimenez, Sierra and Rodon (2012). This dimension of sustainability relates to the financial contribution of firms to stakeholders such as shareholders, employees, and the local community (see Appendix 7). Presley and Meade (2010) provide various financial indicators which are categorised into four elements: strategic factors (e.g. cost reduction and the maintenance of superior financial performance), tactical dimensions (e.g. disposal costs and expenditures) and operational matters (cash to cash cycle time, customer returns and energy consumption).

Similar to other sectors, in the mining sector, the economic dimension has be prioritised in integrating sustainable development dimensions, which culminates in difficulties in achieving a balance between socio-environmental efficiency and economic growth. Thus, increased economic growth in the mining sector has an impact on the environmental and social sustainability due to excessive consumption patterns (Alam & Kabir, 2013).
3.3.4. Relationships among sustainable development dimensions

The way CIMA (2013) depicts sustainability (see Figure 3.2) infers an equilibrium among environmental stewardship (planet), economic growth (profit) and social progress (people). CIMA (2013) extends the traditional triple bottom line dimensions to include the interrelationships between these elements: economic growth including eco-efficiency and socio-economic efficiency, environmental stewardship including eco-efficiency and socio-environmental sufficiency and social progress including socio-economic effectiveness and socio-environmental equity.

Dyllick and Hockerts (2002) framed the three dimensions in the corporate context as the business case (economic), the natural case (environmental), and the societal case (social). In other words, sustainability comprises corporate activities that proactively seek to contribute to sustainability equilibria, including the economic, environmental, and social dimensions of today, as well as their inter-relations within and throughout the time dimension (i.e., the short, long, and longer-term), while addressing the company’s systems (i.e., operations and production, management and strategy, organisational systems, procurement, marketing and communications) without compromising stakeholders’ expectations (Lozano, 2011); thus considering a company's needs, while protecting, sustaining and enhancing the human and ecological resources that will be needed in the future (Sierra, Pellicer & Yepes, 2015). Consequently, Salzmann, Ionescu-Somers and Steger (2005) claim that managing sustainable development practices is “a strategic and profit-driven corporate response to environmental and social issues caused through the organization's primary and secondary activities” (p. 27).

In the context of the mining industry, efforts to summarise sustainable development down into a few words or sentences often result in a reductionist approach that does not cover the immense complexity and scale (Fonseca et al., 2014). In most cases, sustainability in the mining sector
has often been defined contextually with reference to a mine site or community (such as Fleury & Davies, 2012; Gilberthorpe & Hilson, 2016; Veiga et al., 2001; Vintró, Sanmiquel & Freijo, 2014). Such definitions suggest that sustainable development could be attained by the contribution to the well-being of the current generation, with an equitable distribution of costs and benefits, without compromising the potential for satisfying the needs of multiple future generations (Fleury & Davies, 2012), where a company has gained a social licence to operate in a host community (Gilberthorpe & Hilson, 2016), where a combined social and biophysical benefit can be obtained from the lifecycle of a mine and beyond (Veiga et al., 2001), or where there is unnecessary socio-environmental progress (Vintró et al., 2014). Nevertheless, the concept of sustainable development is a dynamic and ongoing process, not a temporary undertaking and it covers the social, environmental and economic dimensions. Dubiński (2013) claims that “It is assumed that these areas are of equal importance. Hence, the emphasis on one area usually leads to a crisis across the entire area of mining activity” (p. 2).

The focus of this study is not on the long-term survival of mining companies, but rather the long-term survival of the people and the ecological environment after the closure of a mine. For the purpose of this study, sustainability is defined as the ability of mining firms to operate in a manner that encourages a balance between the ecological, financial and social dimensions of their operations in order to protect society’s interests in the future.

3.5. **Motivations for companies appearing to operate sustainably**

There has been an increasing interest in getting businesses to work towards sustainable development (Baumgartner, 2014; Moon, 2007). Those efforts towards sustainable development are driven by many factors (Hopkins, 2002; Hahn & Kühnen, 2013; Lozano, 2015; Salzmann et al., 2005). There are different drivers of sustainable development practices for the internal business compared to drivers affecting the environment external to the business.
internal drivers are more proactive and most likely to contribute towards sustainability whereas external drivers, according to DeSimone and Popoff (2000), tend to result in reactive measures, being less likely to help move towards sustainability. Some internal factors have been ethical leadership (Dawson, 1994; Kotter, 1996; DeSimone & Popoff, 2000; Rauter, Jonker & Baumgartner, 2017), risk management and protection of business reputation (Lantos, 2001; Ditlev-Simonen & Atle, 2011), improvements in economic values (Carroll, 1999; CEC, 2001; Lantos, 2001), enhancements in the corporate image (Gürhan-Canli & Batra, 2004; Hahn & Scheermesser, 2006; Morioka & Carvalho, 2016; Vries, Terwel, Ellemers & Daamen, 2015), resources and cost savings, profits and growth, and employees’ shared values; and leadership, and quality (Gale, 2006; Lozano, 2015; Rikhardsson, Bennett, Bouma & Schaltegger, 2005; Schaltegger & Zvezdov, 2015).

However, some external drivers such as national policies, pressure from society, business leadership, universities, non-governmental organisations and stakeholders (Amoako et al., 2017; Fukukawa & Moon, 2004; Lozano, 2015; MacLeod & Lewis, 2004; Zadek, 1999) have played an important role in driving sustainable development in corporate organisations. Table 3.1 lists some internal and external drivers of sustainability practices.

Eweje (2007) notes that “due to complexity of working in developing countries and the spotlights that come with it, the MNEs [multinational enterprises], under intense public scrutiny, are now expected, even required, to carry out the duty of developing the rural areas where they work” (p. 230). Nelson and Weschler (1996) argue that multinational enterprises have a role in global development not only through capital investment, but more importantly, by investing in human capital and providing local people with the tools to drive their own economic development. Therefore, various sustainable development initiatives in developing countries may be seen as a response to the threat of stakeholder sanctions. However, there are
also claims of unethical and immoral behaviour from host communities and nations (Gualandris et al., 2015; Hilson et al., 2014; Rinaldi, Unerman & Tilt, 2014). Thus, there is a need for further studies on what sustainable development initiatives companies are implementing within the contexts of developing economies. These influences on and motivations for sustainable development practices lead to a consideration of the current state of sustainable development performance indicators, which is discussed in the next section.

Table 3.1: Internal and external motivations to engage in sustainability

<table>
<thead>
<tr>
<th>Internal motivations</th>
<th>External motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Attract and retain employees</td>
<td>• Avoid fines and penalties</td>
</tr>
<tr>
<td>• Help improve trust within the company, i.e. stronger employee motivation and commitment</td>
<td>• Help improve trust outside the company, i.e., with business partners, suppliers, consumers, and others</td>
</tr>
<tr>
<td>• Have a more compliant workforce</td>
<td>• A belief that companies must earn their ‘licence to operate’</td>
</tr>
<tr>
<td>• Increase employee productivity</td>
<td>• Meet and exceed stakeholder expectations</td>
</tr>
<tr>
<td>• Help to increase product quality</td>
<td>• Behave ethically</td>
</tr>
<tr>
<td>• Help boost innovation and innovative practices</td>
<td>• Improve relations with regulators and ease access to permits</td>
</tr>
<tr>
<td>• Help manage risks, intangible assets, and internal processes</td>
<td>• Improve access to markets and customers</td>
</tr>
<tr>
<td>• Improve performance and generate more profits and growth</td>
<td>• Improve customer satisfaction</td>
</tr>
<tr>
<td>• Reduce costs while improving process efficiencies and reducing waste</td>
<td>• Help to restore trust in companies</td>
</tr>
<tr>
<td></td>
<td>• Help enhance corporate and brand reputation</td>
</tr>
<tr>
<td></td>
<td>• Reduce or eliminate pressures from non-governmental organisations</td>
</tr>
</tbody>
</table>

(Source: Lozano, 2015, p. 36)
3.6. **Sustainable development performance indicators**

Sustainability performance indicators may be used to measure changes in the environment when best management practices are implemented (Efroymson & Dale, 2015). Performance indicators are also useful in assessing and communicating the status of the environment in terms of a target, providing early warning signals of changes and monitoring trends to provide evidence concerning causes of observations (Cairns et al., 1993; Dale & Beyeler, 2001).

The integration of social, environmental and economic issues into usable sustainability performance indicators can assist organisations, internally and externally (Lodhia, 2014; Schaltegger & Wagner, 2017). Internally, sustainability performance indicators provide a highly visible tool for corporate governance and management of resource inputs and environmental capacities (Hahn & Scheermesser, 2006; Labuschagne et al., 2005). Besides the financial ratios, management requires a range of corporate level measures and trend indicators for decision making, which measure the environmental and social dimensions of the triple bottom line (Callens & Tyteca, 1999; Milne & Gray, 2013; Moller & Schaltegger, 2005). The external perspective presents the use of sustainability performance indicators and associated trends useful for the company and the broader market (Azapagic, 2004; Veleva & Ellenbecker, 2001). In that regard, analysts and external observers such as stakeholders can pinpoint and appreciate the nexus between social, environmental and economic performance as changes occur within the company or across the industry sector (Lodhia, 2014). Thus, stakeholders can observe and track changes and market signals, making knowledgeable decisions based on the shifting operating trends as well as behavioural patterns of business operations (Shields et al., 2002). That is, stakeholders’ perceptions of performance indicators cannot be over emphasised.

A key task of management control is developing strategic planning into strategic management (Schaltegger, 2011). According to Kaplan & Norton (2001), the Balanced Scorecard (BSC) is
able to help in the systematic implementation of strategy as well as in the structuring of a variety of management control perspectives. Chavan (2009) claims, “the purpose of the balanced scorecard is to guide, control and challenge an entire organisation towards realising a shared conception of the future (p. 398). Thus, the BSC enables organisations to connect the non-monetary and financial factors of performance into accounts (Ibrahim, 2015; Kaplan & Norton, 2001; Kerr et al., 2015). The BSC could be applied in sustainable development (see Figure 3.3). Schaltegger (2011) indicates that “The Sustainability Balanced Scorecard (SBSC) represents both a strategic management concept as well as a means of measurement, supporting management logic and performance measurement in the five perspectives of finance, customers, internal business processes, learning and development (p. 20) as well as non-market elements of sustainability (Gibbons & Kaplan, 2015).

The current study appreciates the plentiful studies on sustainability indicators in the mining industry. For example, they include studies on the development of sustainability indicators for the mining industry (Azapagic, 2004); assessment of the impacts and performance of mining sites across the four sustainable development dimensions, and at local, regional and national levels (Chamaret, O’Connor & Récoché, 2007); development of specific indicators and making comparisons between British Petroleum (BP) and Shell (Krajnc & Glavic, 2005); engaging with expert stakeholders in determining the value of indicators and their explanatory capacity (Lodhia, 2014); using multiple case studies to examine inter-linked sustainability indicators (Lozano & Huisingh, 2011); and analysing the measurability and inter-firm comparability of sustainability performance through the qualitative content analysis of sustainability reports of mining firms (Boiral & Jean-François Henri, 2017; Higgins, Stubbs & Milne, 2018). The last of these used the GRI (2015) guidelines which are discussed later in Section 3.7.
This study takes its motivation from such studies, by focusing on adding further understanding and practical indicators to the sustainability body of knowledge. There is a paucity of management and stakeholder perceptions as to how companies are performing on their sustainability initiatives, especially in emerging economies. Consequently, the distinctive contribution of this thesis to the sustainability indicators literature is to provide insights on the perception of stakeholders on sustainability performance and its indicators in an emerging economy.

### 3.7. Accounting and its rationale in an organisation

This is the first of three sections elaborating on previous references to connections between accounting and sustainability, including measuring sustainability performance against stakeholders’ expectations (Kaur & Lodhia, 2018; Schaltegger & Wagner, 2006). I start by
considering the rationales of accounting in an organisation and how these rationales are connected to sustainable development as presented in the conceptual framework (see Figure 3.1).

Conventional wisdom has it that accounting is the measurement and processing of financial information about economic entities, such as businesses and companies, and communication of this information for all sorts of internal and external stakeholders (Powers, Needles & Crosson, 2011). Accounting is concerned with recording all business transactions systematically and then arranging them in the form of various accounts and financial statements. Accounting measures the results of an organisation’s economic activities and conveys this information to a variety of users, including investors, creditors, management, and regulators (Alizada, 2017). Indeed, a further rhetorical device is to call accounting, “the language of business”, suggesting that it the way people in business, especially investors, creditors, directors, and managers, and regulators communicate not only financial and economic measures but broader measures, facts, narratives, etc. about doing business (Loughran, 2011).

Traditionally, “accounting conceptions are able to share two major goals: to control the income and expenses, to decrease the cost which improves chances of making a profit as much as possible, and to collect the financial information” (Burns, Ezzamel & Scapens, 1999). However, in everyday language, accounting is a means by which people justify their behaviour when challenged by another social actor, as “the use of accounts is a method of avoiding the stigma of an accusation of deviance” (Abercrombie, Hill & Turner, 1984, p. 13). The meaning of accounting, or “what counts as accounting” (Miller & Napier, 1993, p.631), is attached to the time and space in which it is used (Ahrens & Chapman, 2007; Burchell, Clubb & Hopwood, 1985; Chua, 1995; Hopwood, 1987; Gray, 2010). According to Roberts and Scapens (1985),
“The only way to understand accounting practice is through an understanding of the organisational reality which is the context of accounting, and which is the reality that the accounting systems are designed to account for” (p. 444). Thus, the practice of accounting is not independent of wider social discourses (Miller & Napier, 1993; Preston, Cooper & Coombs, 1992). Zakaria (2011) claims that “The discursive role of accounting is equally important in improving the visibility of organisational practices; significantly, it also uncovers certain dimensions of everyday practices that are essential for the achievement of organisational strategy but not directly translated into financial performance” (p. 29). Studies from British colonies have classified accounting as a colonising technology. For example, Dixon and Gaffikin (2014) claim that “colonisers espied economic, social and political benefits of colonialistic acts, and accounting usages were initiated and matured alongside these, to avail commerce and life’s personal dealings, religion-making, and government and public policymaking” (p. 683).

Today, governmental personnel and corporate leaders are increasingly concerned about environmental issues and their related costs, revenues and benefits (Seal, 2006; Gray & Bebbington, 2001). According to ACCA (2015, p. 1), this was “precipitated in part by major incidents such as the Bhopal chemical leak (1984) and the Exxon Valdez oil spill (1989)”. They further claim that worldwide media attention was focussed on these incidents causing alarming concerns over major issues such as global warming, loss of natural habitats and depletion of non-renewable resources. Worthington (2012) and ACCA (2015) explain that awareness by businesses of the environmental repercussions of their operations (products and services) has been growing. Hence businesses can no longer ignore these issues as they affect their operations and finances (ACCA, 2015), such as the recent example of BP’s breaking anti-fraud and reporting rules and VW’s air filter scam, resulting in legal suits from the public. What is more, there is a growing consensus that conventional accounting practices do not provide
adequate information to properly support decision-making on environmental management responsibilities (Bebbington, Gray, Hibbitt & Kirk, 2001; Braendle & Kostyuk, 2007; Jasch, 2006; Shleifer & Vishny, 1997; Seal, 2006; Schaltegger & Zvezdov, 2015). Consequently, sustainability accounting emerged and has grown apace, including under other names, such as social and environmental accounting, sustainability reporting, integrated reporting, corporate social responsibility reporting, etc.

3.8. **Sustainability accounting and reporting**

The development of sustainability accounting and reporting over the last 40 years or so has resulted in a wide range of actual and potential accounts portraying organisational interactions with society and with the natural environment (Burritt & Schaltegger, 2010). Proponents of sustainability accounting argue that accounting systems facilitate or even nurture “more distanced forms of accountability” and a style of management that rests upon control at a distance (Roberts & Scapens, 1985, p. 451).

3.8.1. **Sustainability reporting defined**

Sustainability reporting is a broad term for reporting on social, environmental and economic impacts of everyday activities (Elkington, 1997; Milne & Gray, 2013; Schmidheiny, 2006). Buhr (2007) broadly defines sustainability reporting as a means by which organisations engage in communication with various stakeholders, through both formal and informal channels. Sustainability reports disclose meaningful information on an organisation (Guidry and Patten, 2010), in a balanced, but often compartmentalised manner (Lozano and Huisingh, 2011; Lozano, 2013).

GRI (2018) describes a sustainability report as:
A report published by a company or organization about the social, environmental and economic impacts caused by its everyday activities. A sustainability report also presents the organization’s values and governance model, and demonstrates the link between its strategy and its commitment to a sustainable global economy. Sustainability reporting can help organisations to measure, understand and communicate their economic, environmental, social and governance performance, and then set goals, and manage change more effectively. A sustainability report is the key platform for communicating sustainability performance and impacts – whether positive or negative (p. 1).

Thus, sustainability reporting serves as a means to inform stakeholders about what companies are doing and to foster good community relations (Cormier, Gordon & Magnan, 2004; Jenkins & Yakovleva, 2006; Marimon, Alonso-Almeida, Rodriguez & Cortez, 2012; Murguía & Böhling, 2013). Bebbington (2001) and Bebbington and Gray (2001) suggest ‘sustainability reporting’ requires an organisation to be responsible and accountable for its impacts on all stakeholders. However, Bebbington and Larrinaga (2014) are critical of whether this can actually be achieved. They suggest that “these accounts should be conceived of as narratives decoupled from underlying organizational realities, intended (at best) to construct a plurality of discourses about sustainable development and among which it is impossible to adjudicate” (p. 396). These accounts should include information of public interest relating to an organisation’s “interaction with society, the economy and the physical environment” (Buhr et al., 2014). Sustainability reporting can enable organisations to measure, understand and communicate their economic, environmental, social and governance performance, and then set goals, and manage change more effectively (GRI, 2015). Adams and McNicholas (2007) observed and reported on “corporate processes for developing a sustainability report, the hurdles faced by organisations and the way in which organisational change towards improved accountability occurs and can lead to changes in sustainability performance” (p. 382). For all
their strengths and weaknesses (see Cooper, Taylor, Smith, & Catchpole, 2005; Tschopp & Huefner, 2015), such reporting is characterised by a broader range of non-financial information (Gray, 2010; Milne & Gray, 2013; Setia, Abhayawansa, Joshi, & Huynh, 2015).

Recent studies on accountability have criticised extant financial and accounting practices for contributing to what they see as a very limited understanding of accountability and called for more studies to expand this understanding (e.g. Gray, 2010; McKernan, 2012; Mesner, 2009; Tschopp & Huefner, 2015). Another critical proposition is that disembodied forms of accounting need to be complemented with a situation-specific sensitivity for the stakeholders whose interests and values cannot be appropriately accounted for by a system of general rules or principles (e.g. Dumay, Bernardi, Guthrie & Demartini, 2016; Lehman, 1999; Roberts, 2003). Overall, the main argument for the need for accounting in sustainable development has been that accounting practice “needs to get beyond the constraints that have been imposed on its language” (McKernan & Kosmala MacLullich, 2004, p. 345). Thus, accounting being the language of business is challenged by modern changes in society to focus beyond economic issues of organisations to social and environmental matters.

3.8.2. Sustainability reporting indices

Although it is relevant to assess sustainability with multiple indicators, it may be difficult to make business decisions and comparisons among companies based on a large number of performance measurements (Krajnc & Glavic, 2005; Kerr et al., 2015). Therefore, to assist decision makers in this respect, it may be recommended to use a composite sustainable development index that links many sustainability issues, thereby reducing the number of decision-making criteria that need to be considered. There are several sustainability reporting indices, such as the OECD Guidelines for Multinational Enterprises, the United Nations Global Compact (the Communication on Progress), and the International Organization for

Global Reporting Initiative (GRI) - Mining and metals sector

The GRI claims to be “an international independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues such as climate change, human rights [and] corruption” (GRI, 2013). The GRI was established in the US in 1997 by the Coalition for Environmentally Responsible Economies and the Tellus Institute, with the support of the United Nations Environment Programme (UNEP) (Pedersen, 2015). Now based in Amsterdam in the Netherlands, the GRI has pioneered and developed a comprehensive Sustainability Reporting Framework (GRI, 2013, 2015), which is widely used around the world (Jones, 2010). Indeed, KPMG (2017) indicates that 93% of the world’s largest 250 companies report on their sustainability performance, with most of them adopting the GRI reporting index.

In the mining and metals sector, disclosure is required with dimensions of sustainable development that are encountered more frequently or in greater measure in mining than in other sectors. Some of these dimensions are not necessarily captured in the main guidelines (known as G4) but may be in addition to and not as a replacement for the G4 Guidelines (see Appendix 7). As elaborated later in Chapter 4, the main contextual issues in the mining sector include the control, use and management of land; the contribution of mining and metals activities to national economic and social development; community and stakeholder engagement by mining and metals companies; labour relations; environmental management; relationships with artisanal and small-scale mining and an integrated approach to minerals use (GRI, 2013).
Together the G4 Guidelines and the Mining and Metals Sector Disclosures make up the reporting framework for the Mining and Metals sector (GRI, 2013). Having considered the most used index, the next section looks at how sustainability is reported and the state of sustainability reporting.

3.8.3. The state of sustainability reporting

KPMG (2013) opined that “CR [corporate responsibility] reporting is now undeniably a mainstream business practice worldwide, undertaken by almost three quarters (71%) of the 4,100 companies surveyed in 2013” (p. 10) and the “use of Global Reporting Initiative (GRI) guidelines is almost universal” (p. 11). In terms of who produces quality reports, KPMG states that “large companies in the electronics and computers, mining and pharmaceuticals sectors produce the highest quality CR reports” (p.13). Patten (1992) explains that these industries disclose more environmental information in their annual reports because of the sensitive nature of their activities.

The first generation of environmental performance reports that is from the 1990s contained large volumes of inconsistent and unverified information (Cho et al., 2012). This inconsistency of the quality of the contents of these reports made for lack of comparability, both over time and between companies (Beets & Souther, 1999). Despite subsequent encouragement for a common reporting approach to be adopted (e.g., see Beets & Souther, 1999; Deegan, 2004; Stowers & White, 1999), some recent studies (Amoako et al., 2017; de Franco, Kothari & Verdi, 2011) show that this extreme diversity and lack of comparability continues in some places, reflecting sustainability disclosure being unregulated and discretionary. Elsewhere, however, attempts to regulate reporting have led to improvements in quality. Prior survey results show that regulation results in reports which provide information that is both new and
relevant (Amoako et al., 2017; De Franco et al., 2011; de Villiers & Alexander, 2014) as well as valuable to investors for decision making (Healy & Palepu 2001).

One outcome of the ways attempts at regulation have been carried out is that sustainability reporting is country and industry variant to a certain extent (Albelda, 2011; Doorasamy & Garbharran, 2015; KPMG, 2013). Reflecting findings in it reports for earlier years, KPMG (2015) claims that “the main driver for CR [corporate responsibility] reporting continues to be legislative: there is a growing trend of regulations requiring companies to publish non-financial information” (p. 30). Gray, Meek and Roberts (1995) explain that national differences in legal requirements for reporting affect voluntary disclosures because strict requirements may suppress disclosure innovations and so voluntary reporting as well. Similarly, Elango and Sethi (2007) have established that the effect from a multinational company’s country of origin on its sustainability reporting mainly stems from institutional pressures from the government, professional accounting and industry associations, and pressure groups in the country in question. The extent to which a multinational company becomes vulnerable to such pressures differs between companies in relation to cultural, political and legal idiosyncrasies of the respective countries of origin (Buhr & Freedman 2001; Holland & Foo, 2003; Kolk 2005; Momin & Parker, 2013).

There are various other studies of reasons for some sustainability reports being better or worse than others. Some studies on sustainability reporting have indicated a positive influence of foreign ownership on the level of sustainability reporting (such as Cormier & Magnan, 2004; Haniffa & Cooke, 2005), claiming that sustainability reporting is used by foreign business owners due to the need to reduce information asymmetry. However, da Silva Monteiro and Aíbar Guzmán (2010a, 2010b), and Ertuna and Tukel (2010) found that there is no relationship between the level of sustainability reporting and foreign ownership.
Some authors argue that bigger firms need to comply with regulations more than small and medium-sized companies do, and that larger companies cause greater impacts, are more visible, and therefore face greater stakeholder scrutiny and pressure (Ross & Kovachev, 2009; Gallo & Christensen, 2011). However, other studies argue that sustainability accounting implementation and reporting has not much to do with the size of a company, but rather the type of industry it relates to (Choi, 1998; Frost & Wilmshurst, 1998; Ferreira, Moulang & Hendro, 2010). The latter agree that the more environmentally sensitive an industry is, the more substantial its environmental reporting, as stakeholders are more concerned about environmental information for decision making. Other studies agree with these assertions, adding that companies in industries with high social and environmental impacts may need to engage in sustainability reporting in order to respond to sector-specific stakeholder pressure (Parsa & Kouhy, 2008; Sotorrío & Sánchez, 2010).

The level of sustainability disclosure has been partly attributed to cultural issues surrounding a company. Carels, Maroun and Padia (2013) show how sustainability reporting serves as a device for managing stakeholder expectations and conclude that corporate governance developments and the “integrated reporting project have gone hand-in-hand with an increase in the level of disclosures and the extent to which these disclosures are integrated in corporate reports” (p. 957). However, Mathews (2004) and Carels et al. (2013) argue that there is no guarantee that all organisations perceive integrated reporting as a meaningful medium for stakeholder dialogue, especially if stakeholders such as community members and regulators are hostile. Such situations may need other means of communication than sustainability reports, such as face-to-face. In addition, Khlif, Hussainey and Achek (2015) claim that cultural features such as “individualism, masculinity and long-term orientation moderate the relationship between profitability and corporate social environmental disclosures” (p. 313). Maroun (2015), studying the relationship between corporate social environmental disclosures
and financial measures, discovered that sustainability reporting levels in different jurisdictions are affected by the importance of corporate governance systems, differing accounting standards, the use of fair value measures and the relevance to the users of corporate reports.

Other determinants of the extent of sustainability reporting include a high level of indebtedness, leverage, or gearing (Cormier & Magnan, 2003; Stanny & Ely, 2008); non-disclosure of information due to high costs of data collection and reporting (Cormier & Magnan, 2003); disclosure to retain competitive advantage (Daub, 2007) and to retain employees (Welford & Frost, 2006); and disclosure as a risk reduction device (Spence, 2009; Unerman, 2008; Welford & Frost, 2006).

Perez and Sanchez (2009) establish that even though there is a clear evolution in the comprehensiveness and depth of sustainability reports, with context, commitment and social performance scoring high marks and regularly improving, there is still room for improvement in accessibility and assurance of environmental and economic performance. Similarly, Junior et al. (2014), in exploring trends in social and environmental disclosure and the extent of sustainability assurance, found that, although all the organisations they analysed provided some type of information in relation to their social or environmental performance on their official website, not all of them provided assurance, such as auditing, of their sustainability reports.

3.8.4. From sustainability reporting to action

Some authors have also argued that it is one thing to report on sustainability but another thing to act sustainably (Buhr et al., 2014; Chapman & Milne 2004; Cho, Guidry, Hageman & Patten, 2012; Deegan & Rankin, 1997; Font, Walmsley, Cogotti, McCombes & Häusler, 2012; Lodhia, 2014; Milne & Gray, 2013; Morhardt, 2010). What is more, these authors doubt whether the data that are published meet stakeholder expectations based on completeness, transparency, veracity and usefulness. In support of this argument, Cho et al. (2012) found a negative
relationship between environmental performance and the level of environmental disclosure, concluding that “worse performing companies make more extensive disclosures” (p. 10). Cho et al. explain that “the higher levels of environmental disclosure appear to mediate the potential negative effects of poorer performance on environmental reputation” (p. 23). Lodhia (2014) also indicates that the reporting of sustainability issues by organisations, primarily in corporate annual reports, seem to be a public relations exercise designed to enhance the esteem of a company. In contrast to these findings, others have argued that companies with good social or environmental performance tend to report more (Belkaoui & Karpik, 1989; Clarkson, Li, Richardson & Vasvari, 2008; Gelb & Strawser, 2001).

3.9. Management accounting and control practices, and sustainability

In previous sections, the emphasis was placed on how accounting has contributed to sustainability via external reporting. The second focus of accounting for sustainable development is on how accounting has sought to engage with sustainable development principles through management accounting and control, and so in the internal applications of accounting systems, processes, etc. (Antheaume, 2004; Atkinson, 2000; Bebbington, Brown, & Frame, 2007; Bebbington et al., 2014; Bebbington, Gray, Hibbit, & Kirk, 2001; Christ, Burritt & Varsei, 2016; Christensen & Himme, 2017; Fraser, 2012; Gunarathne et al., 2016; Maas et al., 2016; Virtanena et al., 2013). Indeed, CIMA (2011) argues that “management accountants must now take a more active role in sustainable development” (p. 2).

3.9.1. Rationales of accounting practices in sustainable development

Parker (2000) argues that, historically, the accountant’s role in organisations has been concealed by the more prominent roles of public practice accountants who are engaged in financial reporting, auditing, and taxation activities. The role of accountants in organisations
was mainly seen to be limited to contributing towards the planning and control of organisational operations (Milne, 1996; Parker, 2000). However, Albelda (2011), Burnett and Hansen (2008) and Myburgh (2001) claim that, with the passage of time, the traditional roles of accountants have evolved and that empirical evidence shows that the relationship between environmental and economic performance has increased, leading to accountants’ roles as facilitators of decision-making, with new performance measures and analysis tools which integrate environmental issues into their roles. This section discusses some of the major purposes of accounting in sustainable development practices of organisations.

Environmental management systems are an increasingly popular means of coordinating, monitoring and managing information on environmental strategy (Arjaliès & Mundy, 2013; Larrinaga-Gonzales & Bebbington, 2001; Martín-de Castro, Amores-Salvadó & Navas-López, 2016). These systems incorporate traditional mechanisms, such as budgeting, performance measurement systems, and risk management processes used commonly in conventional business but are tailored to address the specific issues that relate to environmental issues (Bebbington, 2007; Martín-de Castro et al., 2016). The United Nations Division for Sustainable Development (UNDSD) suggested that environmental management accounting is simply doing better, extra detailed accounting, while “wearing an environmental hat” that helps to identify hidden costs (UNDSD, 2001) such as encouraging the purchase and manufacturing of environmentally friendly inputs and outputs (e.g., recycled and recyclable materials).

Accounting practice is argued to support management of the environmental decision-making process via various techniques of environmental cost allocation, performance measurement and business environmental analysis (Fuzi, Habidin & Effendy, 2016; Qian, Hörisch & Schaltegger, 2018; Staniskis & Stasiskiene, 2006). Besides using it to identify internal and external costs, accounting can also be applied in the allocation of these costs within existing
and emerging environmental and sustainability accounting frameworks (Schaltegger et al., 2013). It also facilitates cost-benefit analysis which compares the present values of benefits and costs to evaluate a project or a policy and in terms of ‘sustainability’; it recognises future generations’ rights in the calculation of benefits and costs (Perrini & Tencati, 2006). Accounting practices also support managers by providing information on the use and cost of resources that impact the environment (Bartolomeo et al., 2000; Arjaliès & Mundy, 2013). Arguably, these functions provide competitive advantage (Burnett & Hansen, 2008) as well as involving relevant stakeholders in organisational decisions (Schnackenberg & Tomlinson, 2016).

Bennett and James (2017) and Bebbington (2007) claim that a sustainability accounting system moves a step further than planning and control by focussing on measuring and analysing financial and non-financial data and thus disclosing the environmental performance of a business both internally and externally. The responsibility of the accountants ranges from being involved in “environmental audits through the internal audit programme, to appraising investment proposals with an eye to the environmental benefits, to the analysis of waste and energy costs in order to encourage their reduction, and to the provision of information to support environmental management” (Mistry et al., 2014, p.5). Arjaliès and Mundy (2013) posit that, “Given the central role of companies in contributing, even in a narrow and self-interested way, to sustainability, managers’ use of MCS can be instrumental in transforming practices that are congruent with sustainable development” (p. 286).

Milne (1996) argues that the bottom line of sustainability is to wisely manage the use and flow of inputs (such as materials, energy, and/or water) used in production processes of enterprises and outputs related to sustainability (such as products, emissions, and wastewater) that come after the production process. He further explains that organisations need to apply appropriate
accounting practices to create cost accounting data to guide business decision-making regarding these inputs and outputs. Consequently, a sustainable organisation is one which not only creates value for shareholders but also shows concern for the environment and ultimately the interests of society (IFAC, 2005; Tsui, 2014).

Environmental regulations also impose requirements on companies. Several nations have legal provisions which, when enforced, can increase environmental cost. Hence, these costs need to be seriously identified and controlled and reduced by management (Gale, 2006, Schaltegger et al., 2012; Schaltegger et al., 2013; Rikhardsson et al., 2005). Information used by management for decision making may be inaccurate making it difficult to track and trace certain environmental information such as costs accurately (Schaltegger et al., 2010).

Accounting and management controls enable managers to make decisions about potential risks and hazards, such as forthcoming legislation, and potential opportunities, such as improved waste management processes (Schaltegger & Burritt, 2010). Schaltegger et al. (2013) and Rikhardsson et al. (2005) claim that, if managers wish to lower their costs or environmental impacts so as to reduce penalties for non-compliance or the outrage of different stakeholders, then they need to account for their environmental impacts and remedies, as well as voluntarily report on them. Such reporting maintains corporate legitimacy in the eyes of customers, society and other stakeholders since it is seen as leading to commitment, assessment, monitoring, controlling and elimination of the causes of adverse environmental impacts and costs (Deegan, 2013).

Schaltegger (2011) elaborates on the role of management control in sustainable development practices by companies:

Sustainability management control thus has as its goal the continuous improvement, in an iterative process with management, of environmental and social performance while
at the same time furthering the company’s business success. This goal is achieved by means of information, decision-making, planning, communication and control systems that provide management with decision-making support (p. 22).

The next section outlines the differences and similarities between management control and accounting practices.

3.9.2. Management controls and accounting practices

Most broadly, management control has been defined as “the process of steering organisations through the environments in which they operate, to achieve both short-term and longer-term goals” (Otley & Soin, 2014, p. 1). An organisation and its employees initially may have divergent ambitions about the objectives to accomplish (Lueg & Radlach, 2016). This is as a result of employees’ diverse personalities, lack of direction, motivations, behaviour, and personal limitations (Merchant, & Van der Stede, 2012). To synchronise overall objectives, management employs management control (Malmi & Brown, 2008) which is complete “systems, rules, practices, values and other activities management put in place in order to direct employee behavior” (p. 290). Kerr et al. (2015) indicate that,

The integration of sustainability reporting into MCS holds advantages for organisations to operationalise sustainability objectives, broaden stakeholder accountability as well as intensify interactions with stakeholders, formalise organisation beliefs and improve communication of sustainability measures internally (p. 189).

Otley (1999) argues that “Management control systems provide information that is intended to be useful to managers in performing their jobs and to assist organisations in developing and maintaining viable patterns of behaviour” (p. 364). Thus, management control is the process
by which managers influence other members of the organisation to implement the organisation’s strategies (Mass et al, 2016; Otley, 2016). Management control involves extensive measurement and it is therefore related to and requires contributions from accounting (Anthony, 1965).

Some authors argue that management control consist of formal and informal controls. Management control is usually associated with formal, accounting-based controls (Anthony, 1965). According to Norris and O'Dwyer (2004), formal controls are contractual obligations that consist of rules, performance evaluation, reward criteria, and budgeting systems to control results through feedback and feed forward loops, whilst informal controls comprise beliefs, shared values, norms, cultures, traditions, and self-control (Otley & Soin, 2014). Whilst formal controls are easily identified (Langfield-Smith, 1997), informal controls are less visible and might not be deliberately designed means to direct employees' attention to organisational objectives (Otley & Soin, 2014). Nevertheless, informal controls are seen as being at least as effective as formal ones (Flamholtz, Das, & Tsui, 1985; Langfield-Smith, 1997; Ouchi, 1979).

The US based Institute of Management Accountants (IMA) (2008) defines accounting as “a profession that involves partnering in management decision-making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization’s strategy” (p. 1).

The Chartered Institute of Management Accountants (CIMA) (2005) defines accounting as:

...the application of the principles of accounting and financial management to create, protect, preserve and increase value for the stakeholders of for-profit and not-for-profit enterprises in the public and private sectors. Accounting is an integral part of management (p. 18).
In making the definition clearer CIMA felt the need to include areas accounting information may address:

It requires the identification, generation, presentation, interpretation and use of relevant information to:

i. Inform strategic decisions and formulate business strategy

ii. Plan long, medium and short-run operations

iii. Determine capital structure and fund that structure

iv. Design reward strategies for executives and shareholders

v. Inform operational decisions

vi. Control operations and ensure the efficient use of resources

vii. Measure and report financial and nonfinancial performance to management and other stakeholders

viii. Safeguard tangible and intangible assets

ix. Implement corporate governance procedures, risk management and internal controls” (CIMA, 2005 p. 18).

According to Maciariello and Kirby (1994), management control is concerned with coordination, resource allocation, motivation, and performance measurement. Maciariello and Kirby indicate that the practice of management control and the design of management control systems is multidisciplinary as it involves: extensive measurement requiring contributions from accounting, especially management accounting; resource allocation decisions requiring contributions from economics, especially managerial economics; and communication; and motivation drawing contributions from social psychology, especially organisational behaviour (see Figure 3.4).
These definitions consider accounting as a “partner” in decision making. The strategic contribution of management accountants reflects the evolution of the role of management accountants over the last two decades (IMA, 2008, p. 1). That is, “the management accountants’ contribution has moved from the lower end of the organisational information value chain to the very highest levels” (pp. 1-2), thus fulfilling managerial control functions. Therefore, the terms “accounting” and “management control systems” are sometimes used interchangeably (Chenhall, 2003). This is not surprising as Otley, for example, has already pointed out that in the past “management control became largely synonymous with accounting” (Otley, 1999, p. 364). Otley differentiates accounting as referring to a collection of practices such as budgeting or product costing whilst management control systems refer to the systematic use of accounting to produce results.
3.9.3. Management control and sustainable development practices

Research on the interface of management control and sustainable development has gained a growing interest in corporates including related concepts such as corporate social responsibility and corporate sustainability (Schaltegger & Burritt, 2005; Van Marrewijk, 2003). There is an emergent body of academic literature on management control for sustainable development (e.g., Battaglia, Passetti, Bianchi & Frey, 2016; Buhr & Gray, 2012; Crutzen et al., 2017; Günther et al., 2016; Gond et al., 2012; Hahn, Preuss, Pinkse & Figge, 2014; Lueg & Radlach, 2016; Norris & O'Dwyer, 2004; Maas et al., 2016; Morsing & Oswald, 2009; Riccaboni & Leone, 2010; Schaltegger & Wagner, 2006). This is accompanied by substantial interest around the emergence of new forms of accounting and control for sustainability such as eco-control, social indicators, material flow cost accounting systems and stakeholder value concepts (Engert et al., 2016) and the way in which higher level integration of environmental and social issues into management control systems can support strategic integration of sustainability into organisations (Engert et al., 2016; Gond et al., 2012). Management control is argued to play a central role in supporting the formulation and implementation of strategies, policies and programmes orientated towards sustainable development (Ballou, Casey, Grenier & Heitger, 2012; Engert et al., 2016; Epstein & Roy, 2001; Gond et al., 2012; Perego & Hartmann, 2009). Lueg and Radlach (2016) argue that organisations that aim to enforce sustainable development alter the notion of traditional management control. Ball and Milne (2005) conclude that “new ideas and tools for management control are essential in the context of a shift towards sustainability” (p. 324).

Hahn et al. (2014) theoretically argue that differences between cognitive content and structure influence the three stages of the sense-making process (i.e., managerial scanning, interpreting, and responding) with regard to sustainable development among organisations. They elaborate
on why managers rarely push for radical change when facing complex and ambiguous sustainability issues “since they are hampered by ambivalence and prudence” (p. 35). Crutzen et al. (2017) explored and theorised control patterns in large European firms. The results show that all researched companies deploy sustainability management controls. There are two distinct approaches to management control for sustainability: a focus on either a formal or an informal approach. Similarly, Norris and O'Dwyer (2004) examined the perceived influence of formal and informal control systems on socially responsive managerial decision-making through one in-depth case study in a large UK firm with findings indicating the dominant influence of informal controls such as social and self-control in instilling socially responsible decision making among the managers.

Schaltegger and Wagner (2006) also demonstrate how the management of the largest printing facility of Axel Springer developed top-down formal controls of sustainable development related issues by using the balanced scorecard approach. This study recommends that management of sustainability performance requires a sound management framework which connects environmental and social management with the business and competitive strategy and management. Such a management framework should also integrate environmental and social information with economic business information and sustainability reporting. Based on a longitudinal eight-year study (2006–2014) in a large Italian food co-operative, Battaglia et al. (2016) analyse whether and how the development and the use of sustainability control systems have been able to promote the integration of sustainability within an organisational strategy. The study shows that sustainability integration remains a fragile concept even in a co-operative, despite the similarities between co-operative values and the principles of corporate social responsibility.
Morsing and Oswald (2009) conducted case study research on Novo Nordisk A/S from the perspective of organisational culture. The study explores the extent to which contemporary management control systems can help to influence sustainability at the operational level. Similarly, Gond et al. (2012) studied the uses of both management controls and sustainability controls (diagnostic vs. interactive) as well as their level of integration on three dimensions (technical, organisational and cognitive) to delineate eight ideal-types of organisational configurations. Others have empirically illustrated that management control systems are able to promote sustainability integration (Buhr & Gray, 2012; Riccaboni & Leone, 2010). The significance of integrating and studying specific sustainability controls systems with the more traditional management control systems have also been highlighted (George, Siti-Nabiha, Jalaludin & Abdalla, 2016), as this helps to ensure that business operations are run in conjunction with sustainability issues. Contrary to these findings, Durden (2008) claims that management controls are not able to monitor corporate social responsibility, and thus do not contribute to sustainable development integration.

Berry et al. (2009) and Lueg and Radlach (2016), in their literature reviews, identify sustainability control as an important emerging theme. Even though a growing body of literature argues that management control is crucial for corporate sustainable development (e.g., Durden, 2008; Gond et al., 2012; Günther et al., 2016; Norris & O'Dwyer, 2004), only a few empirical studies have examined management control and accounting practices from the point of view of sustainable development (Crutzen and Herzig, 2013; Epstein & Wisner, 2005; Gond et al., 2012; Günther et al., 2016) and these have not obtained wider stakeholder opinion on the role of management controls in sustainability practices. This study fills this gap by examining the opinion of stakeholders of a multinational mining company as to how they perceive the role of accounting sustainable development practices.
3.9.4. Accounting and management controls in sustainable development

In the past, some academics argued that accounting was ill-defined as it does not fully reflect corporate efforts towards sustainability decision-making (Bartolomeo et al., 2000; Burritt et al., 2002b). These authors claimed that accounting provides an inadequate understanding of what factors drive or prevent internal changes towards improved environmental management and accountability performance (Bui & de Villiers, 2017; Lee, 2011).

In recent years, however, there has been a consensus as to how accounting practices can contribute to sustainability (Burritt & Saka, 2006), namely, through Environmental Management Accounting (EMA). Even though Burnett and Hansen (2008) argue that EMA as a concept provides a strong incentive for business entities to invest in it, many studies have revealed that the adoption of EMA in practice is limited (Christ & Burritt, 2013a; Epstein, 1996; Ferreira et al., 2010; Joshi et al., 2001). Hence, in this study, I did not look just for EMA, but rather examined the application of accounting more generally in sustainability. That is the present study examines how accounting contributes to sustainable development practices.

Not only is the application of accounting in sustainability lacking in practice, there has been evidence of the absence of sustainable development in the accounting curriculum of universities (Burritt et al., 2009; Ferreira et al., 2010; Jalaludin et al., 2011; Christ & Burritt, 2013). Burritt & Tingey-Holyoak (2013, p. 1) claim that, in addition to the impact on academic knowledge, “increased collaboration between academic accounting and professional practice will be the only way for the evolution of the relationship between research and practice of sustainability embedded carbon accounting in order to forge ahead towards cleaner production.”

Epstein and Roy (2000) elaborate on how to inculcate environmental issues into a company’s capital investment decision-making process. They argue that rather than implementing
environmental control in small projects, companies need to choose technological projects that will both stabilise environmental conservation and improve environmental performance. Staniskis and Stasiskiene (2002) also support this assertion that accounting could help promote cleaner production and investments. They further explain that application of accounting can integrate two of the major areas of sustainable development, namely, the environment and economics, to help improve corporate decision-making. Albelda (2011) agrees with these arguments, adding that accounting practices perform their role in environmental management by highlighting “the four accounting system significant elements: commitment to the continual improvement of the environmental performance; compliance with environmental legislation; communication with interested parties; and employee involvement” (p. 1). Perez, Ruiz and Fenech (2007, p. 1), from a multiple case study in Spain, list six valuable “intangible assets” to accounting systems for improving environmental performance: “awareness of employees; environmental knowledge; skills and expertise of employees; the commitment of managers; cross-functional coordination; the integration of environmental issues in strategic planning process; and, the use of accounting practices”.

Bartolomeo et al. (2000) conclude from their trans-Europe survey that even though accounting implementation exists, it is limited to a few experimental projects. Likewise, Gadenne and Zaman’s (2002) survey indicates that many Australian companies are yet to develop a holistic approach to environmental costing, and management accountants are convinced that environmentally-induced costs and expenses should be reported as notes to financial statements, instead of in the profit and loss statement in the corporate annual report. Similarly, Burritt and Saka (2006), based on their multiple case studies in Japan, claim that there is no full application of accounting techniques in practice, in spite of the fact that accountants have agreed on the relevance of accounting to decision making.
Bouma and Wolters (1998) found that smaller firms are less likely to apply accounting information for accomplishing their environmental targets than larger firms. Ross and Kovachev (2009) give a possible reason why larger companies use accounting more, arguing that bigger firms need to comply with regulations more than small and medium-sized companies. Conversely, Choi (1998), Frost and Wilmshurst (2000) and Ferreira et al. (2010) argue that implementation of accounting relates not so much to the size of a company, but rather to the type of industry it is in. The latter authors agree that the more environmentally sensitive an industry is, the more substantial its environmental reporting as shareholders are more concerned about environmental information for decision making.

Several environmental accounting researchers have investigated companies that belong to environmentally sensitive industries, such as chemical, mining, energy, petroleum, utilities and resource companies (Bebbington, Gary & Walters, 1994; Birkey, Michelon, Patten, & Sankara, 2016; Neu, Warsame & Pedwell, 1998). Patten (1992) and Cormier and Gordon (2001) explain that these industries disclose environmental information in their annual reports as a result of the sensitive nature of their activities. Frost and Wilmshurst (1998) found from their survey of Australian companies that environmental sensitivity is not the only reason for the adoption of accounting but other factors such as institutional pressures also account for the adoption of accounting. Since then, several studies (such as Gedenne & Zaman, 2002; Ross & Kovachev, 2009; Jalaludin et al., 2011; Jamil et al., 2015) have confirmed this reactive reason for accounting implementation.

Recently, there has been overwhelming evidence of the role of accounting practices in sustainability, such as Kerr et al. (2015) who conducted case studies of three New Zealand organisations. The studies found that the integration of sustainability reporting into management control systems facilitates in operationalising sustainable development
objectives, formalising organisational beliefs, increasing stakeholder accountability and improving internal sustainability communication. Other studies have also researched into fostering social sustainability management through safety controls and accounting (Gunarathne et al., 2016), improving environmental accounting (Christensen and Himme, 2017), management accountants’ perception of their role in accounting for sustainable development (Mistry et al., 2014) and stakeholders’ influence on environmental strategy and performance indicators (Rodrigue et al., 2013). Other have also focussed on integrating corporate sustainability assessment, accounting, control and reporting (Maas et al., 2016, a, b), environmental management control systems (Pondeville et al., 2013), environmental accounting for trade-offs (Christ et al., 2016), the role of accounting and the accountant in the environmental management system (Wilmshurst & Frost, 2001), social and environmental accounting, organisational change and accounting (Contrafatto & Burns, 2013), as well as how the role of management accountants and accounting practices acted as facilitators of sustainable development (Albelda, 2011).

Despite recent calls for more dialogue and engagement with sustainable development stakeholders (Diouf & Boiral, 2017; Sierra-Garcia et al., 2015; Strand & Freeman, 2015), with global surveys consistently reporting that stakeholder pressure is a key motivator for improved managerial focus on sustainable development in companies (KPMG, 2015), extant sustainable development research in accounting such as those mentioned above have mainly focussed on managerial and employee practices and perceptions. Thus, even though the concept of sustainability is not new in accounting research, examining the opinions of a broader range of stakeholders has not been widely studied in accounting research.
3.9.5. Accounting practices and sustainability research in developing economies

Since emerging economies usually do not have the institutional capacity and backing in place to promote environmental protection or to encourage the inclusion of environmental costs in decision making (Burritt et al., 2009; Davy, 1997; Thomson, 2015), emerging economies face greater difficulties in implementing accounting in sustainability than developed countries (e.g. Gale, 2006; Schaltegger et al., 2012). A large proportion of global industrial mining takes place in emerging economies, mining minerals such as gold, bauxite, magnesium, iron, and copper. If these resources are to be extracted in a sustainable way, there must be transparent measures of accountability developed and supported by governments, multinational companies, legislative bodies, and civic organisations amongst others (Bryan & Hofmann, 2008; Gray, 1996; Gond et al., 2012).

Lodhia (2003) found that accounting professionals in Fiji are completely unprepared to handle environmental accounting transactions. Similarly, Namakonzi and Inanga (2014), in a multiple case study, argue that accounting techniques like activity-based costing, budgetary control and total quality management do exist in Uganda and that companies have well defined environmental goals, but environmental accounting does not exist. In addition, Yassin (2013), from a mixed method study, argues that in Egypt manufacturing companies have few applications of environmental accounting and that coercive pressure (e.g., pressure from laws and regulations) is more effective than normative and mimetic pressures. In a pilot case study of a rice milling firm in the Philippines, Burritt (2009) examines the feasibility of using environmental accounting as a tool to enable environmental investment decision-making in the context of the emerging markets for carbonised rice husk. The study concludes that if environmental accounting technologies were available they could be applied to reduce the quantity of solid waste from rice milling and related environmental and social risks.
In contrast, Abiola and Ashamu’s (2012) survey in Nigeria found that National Petroleum Company (NNPC) managers do apply environmental accounting techniques in record keeping. Similarly, Jamil, Mohamed, Muhammad and Ali (2015) discovered that in Malaysia, most small and medium firms have a budget allocation for environmental activities and practice physical environmental accounting. Also, Doorasamy and Garbharran’s (2015) study in South Africa shows that elements of environmental accounting exist in some firms but environmental costs are treated as costs of production. Sulaiman and Mokhtar (2012) conclude that, even though in Malaysia environmental accounting is accepted as a tool which encourages companies to acquire environmental information, the respondents do not think that environmental accounting development should be mandatory for all industries in spite of the benefits they stand to gain, but environmental accounting implementation should be limited to companies whose operations have an influence on the environment. Similarly, Mohd Khalid et al. (2012) found that components of environmental-related accounting exist within some Malaysian companies. However, in contrast to the findings of Sulaiman and Mokhtar they claim that “companies are willing to implement environmental accounting related tools as long as the consequences for them are financially beneficial” whether they are environmentally sensitive firms or not (Khalid et al, 2012, p. 25). Li (2004) claims that, as far as China is concerned, environmental accounting application is relatively low but the government and individual companies are striving very hard to keep pace with the global trend of environmental protection which may include the use of environmental accounting.

In conclusion, there are key dissimilarities between the emerging countries of Eastern European and China, as there are among countries in South East Asia, the Middle East, North Africa and sub-Saharan Africa (Fawzy, 2004; Samaha, Dahawy & Hussainey, 2011), and whilst several accounting studies conducted in advanced economies (such as Burritt et al., 2009; Ferreira et al., 2010; Greig, Lord & Shanahan, 2006; Jalaludin, Sulaiman, & Nazli Nik Ahmad, 2011;
Christ & Burritt, 2013) with high environmental resemblance agree that sustainability accounting is practiced to some extent but not fully explored, the few empirical studies conducted in emerging economies (such as Abiola & Ashamu’s, 2012; Lodhia, 2003; Namakonzi & Inanga, 2014; Li, 2004; Yassin, 2013) have contradictory findings. There is a need for further research to add evidence to previous accounting research findings in emerging economies and to contribute to the limited literature.

3.10. Chapter summary

The purpose of this chapter was to explain the conceptual and theoretical framework, to provide the rationale behind the choice of research questions and to show how they are appropriate for the identified theory and concepts in addressing the research question. This chapter achieved this by identifying stakeholder theory as the theoretical framework and further reviewing extant literature on sustainability and stakeholder demands for sustainable development practices. The chapter has served to highlight the various interpretations of what accounting is and the roles of accounting in sustainability.

It was established that there are two main branches of stakeholder theory, the ethical and the managerial. Whilst the ethical branch of stakeholder presumes that for an organisation to survive, there must be an interdependent relationship between the organisation and its stakeholders, the managerial branch proposes that the level of interest an organisation will have in a stakeholder is dependent on the extent to which an organisation believes such a relationship needs to be managed in the interests of the organisation (Neu, Warsame and Pedwell, 1998). Companies in the extractive industries, particularly those involved in mining, are under intense pressure and scrutiny from a number of societal forces to report and account for what they do towards sustainability. As such, stakeholder theory appears to be appropriate for this study on
sustainability and the perceived role of accounting in sustainable development practices of the mining sector.

In terms of what sustainability refers to, the chapter explained that there is pluralism in the meaning. The chapter established that sustainability has three dimensions (social, environmental and economic) and these dimensions conflict and complement each other. Companies are motivated by both internal drivers and external pressures from stakeholders to embrace sustainable development.

Another direction in the extant literature reviewed in this chapter covers the reasons why accountants should engage in sustainable development. First, there have been more calls for accountants to engage in sustainable development practices emerging from jurisdictional requirements which include sustainability requirements for organisations (Milne, 1996; KPMG, 2014). Another factor is the calls from sovereign leaders that organisations should have a greater awareness of sustainable development practices (Parker, 2000; Berry et al., 2009). In addition, there is social change influencing society’s perceptions of sustainable development practices which call for the attention of accountants (Milne, 1996; Ferreira et al., 2010).

The literature on managerial controls and accounting in sustainability was analysed, and findings of a growing body of literature arguing that management control is crucial for corporate sustainable development (e.g., Durden, 2008; Gond et al., 2012; Günther et al., 2016; Norris & O'Dwyer, 2004). However, only a few empirical studies have examined management control and accounting practices in sustainable development from the point of view of stakeholders (Crutzen and Herzig, 2013; Epstein & Wisner, 2005; Gond et al., 2012; Günther et al., 2016). These studies do not seek the wider stakeholder opinion on the role of management controls in sustainability practices.
There was an examination of literature on accounting and sustainable development in emerging economies. It was discovered that whilst literature in advanced economies concentrated mostly on environmental dimensions, those from emerging economies were more focused on social issues. In spite of mining firms’ operations posing environmental and social threats, especially in emerging economies, not many accounting studies have been conducted on how sustainable development is practiced by companies in emerging economies, particularly in the mining sector.

This leads to the next chapter which discusses the research context, particularly the mining sector globally and in Ghana, as well as the organisational profile of the case mining company.
Chapter 4: The mining industry, sustainability in Ghana’s mining sector and profile of Gold Fields and its Damang Mine

4.1. Introduction

In Chapter 3, it was established that the extant literature has identified the connection between sustainable development and business activities and the implications of such recognition for accounting in and about environmentally sensitive industries. This is certainly true of the mining sector and the accounting and sustainable development literature published about it in recent years. It is this literature on which I draw for this chapter.

Mining in Ghana and by Gold Fields at the Damang Mine can be understood best by starting with a general view that mining in its widest sense is the process of obtaining any material from the earth through extraction, drilling, etc. These materials may be non-renewable resources, such as petroleum and natural gas, metals such as gold, diamonds, copper, zinc and lead and other minerals such as oil shale, dimension stone, rock salt, limestone, chalk, coal, potash, gravel and clay (Chalov, 2014; Xie, 2012). Typically, the phases of a mining project are exploration to find the deposits, developing to begin mining, exploitation which is the actual mining, extracting the mined ores to a processing site, tailings disposal which involves the storage of waste from the extraction process, site reclamation and closure which involves the restoration of disturbed land that has been mined to a natural or economically usable status.

Mining is carried out wherever these mineral deposits occur naturally, including in Ghana, which since time immemorial has been a location for mining, miners and mining organisations.

These matters are elaborated in this chapter. Section 4.2 provides an overview of the world’s mining industry, including how mining is carried out. I further bring to light how Ghana’s mining sector has evolved over centuries and explain the present structure of Ghana’s mining
industry with emphasis on the regulatory bodies associated with the industry. In Section 4.3, I review the rising tensions around the mining sector being expected to adopt sustainable development practices; this includes how stakeholder demands, even outcries, have influenced the sector and how sustainability has been institutionalised within the sector. Also, the section outlines the impacts of the sector on both the natural and social environments, particularly in Ghana. The section further gives an overview of Gold Fields Limited and its Damang Mine. Section 4.4 presents a summary of the chapter.

4.2. The mining industry and its operations in Ghana

Mining is big business and a large part of the world economy. The mining industry has continued to outperform the overall market with most mines being state owned (Xie, 2012). The largest 50 global mining companies in the first quarter of 2017 had a combined worth of US$842 billion (Mining.com, 2017). Table 4.1 presents the largest ten global mining companies, the location of their Headquarters, the minerals mined by them and their and their market capitalisation. However, the whole mining industry is too big to deal with here and not that relevant, so I will focus on gold mining and, in particular, Gold Fields and its competitors.

The rest of this section comprises information as follows; section 4.2.1 identifies the leading global gold mining players, section 4.2.2 outlines gold mining methods and section 4.2.3 brings to light how Ghana’s mining sector has evolved over centuries and explains the present structure of Ghana’s mining industry with emphasis on the regulatory bodies associated with the industry.
Table 4.1: World’s largest mining companies based on market capitalization in 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>Headquarters</th>
<th>Operations</th>
<th>1 year change (%)</th>
<th>Market cap. US$ billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BHP Billiton</td>
<td>Melbourne, Australia</td>
<td>Diversified</td>
<td>57.1</td>
<td>90.67</td>
</tr>
<tr>
<td>2</td>
<td>Rio Tinto</td>
<td>Melbourne, Australia</td>
<td>Diversified</td>
<td>62.1</td>
<td>74.04</td>
</tr>
<tr>
<td>3</td>
<td>Glencore</td>
<td>Baar, Switzerland</td>
<td>Diversified</td>
<td>99.3</td>
<td>55.98</td>
</tr>
<tr>
<td>4</td>
<td>China Shenhua Energy</td>
<td>Dongcheng, China</td>
<td>Coal</td>
<td>56.2</td>
<td>54.96</td>
</tr>
<tr>
<td>5</td>
<td>Vale</td>
<td>Rio de Janeiro, Brazil</td>
<td>Steel Raw Materials</td>
<td>95.3</td>
<td>48.31</td>
</tr>
<tr>
<td>6</td>
<td>Coal India</td>
<td>Kolkata, India</td>
<td>Coal</td>
<td>2.8</td>
<td>28.18</td>
</tr>
<tr>
<td>7</td>
<td>Southern Copper</td>
<td>Phoenix, US</td>
<td>Base Metals</td>
<td>30.4</td>
<td>28.04</td>
</tr>
<tr>
<td>8</td>
<td>Norilsk Nickel</td>
<td>Moscow, Russia</td>
<td>Base Metals</td>
<td>3.1</td>
<td>25.30</td>
</tr>
<tr>
<td>9</td>
<td>Barrick Gold</td>
<td>Toronto, Canada</td>
<td>Precious Metals</td>
<td>42.2</td>
<td>22.67</td>
</tr>
<tr>
<td>10</td>
<td>Anglo American</td>
<td>London, UK</td>
<td>Diversified</td>
<td>3.5</td>
<td>21.28</td>
</tr>
</tbody>
</table>

(Mining.com, 2017)

4.2.1. The Leading global mining players

In 2017, the largest 10 listed, non-state owned gold miners contributed nearly 30% of global mining output with one of them (Barrick Gold) being part of the top 10 global mining companies (Mining.com, 2017). Table 4.2 presents the largest 10 non-state owned (listed) global mining companies based on production in 2016.

Surprisingly, none of the top mining companies listed in Tables 4.1 and 4.2 mines oil and gas. This shows how relevant gold mining is in the mining sector. However, there has been continuous criticism on the impact mining activities have on the environment due to its methods of operations. This leads to the next section on the methods of mining exploitation.
### Table 4.2: World largest non-state owned listed gold mining companies in 2016

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>2017 annual Production (M oz)</th>
<th>Annual Production Change (%)</th>
<th>AISC (US$ per oz)</th>
<th>AISC Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Barrick Gold</td>
<td>5.52</td>
<td>-9</td>
<td>730</td>
<td>-12</td>
</tr>
<tr>
<td>2</td>
<td>Newmont Mining</td>
<td>4.90</td>
<td>6</td>
<td>912</td>
<td>-2</td>
</tr>
<tr>
<td>3</td>
<td>AngloGold Ashanti</td>
<td>3.63</td>
<td>-8</td>
<td>986</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Goldcorp</td>
<td>2.87</td>
<td>-17</td>
<td>856</td>
<td>-4</td>
</tr>
<tr>
<td>5</td>
<td>Kinross Gold</td>
<td>2.79</td>
<td>8</td>
<td>984</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Newcrest Mining</td>
<td>2.48</td>
<td>-1</td>
<td>763</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Gold Fields</td>
<td>2.15</td>
<td>0</td>
<td>980</td>
<td>-2</td>
</tr>
<tr>
<td>8</td>
<td>Polyus Gold</td>
<td>1.97</td>
<td>12</td>
<td>572</td>
<td>-4</td>
</tr>
<tr>
<td>9</td>
<td>Agnico Eagle</td>
<td>1.66</td>
<td>-1</td>
<td>824</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Sibanye Gold</td>
<td>1.51</td>
<td>-1</td>
<td>954</td>
<td>-7</td>
</tr>
</tbody>
</table>

Key: AISC, All in sustainability cost; M oz, million ounces

(Mining.com, 2018)

#### 4.2.2. Methods of mining exploitation

As I outlined in chapter 1, my concern about negative social, environmental and economic impacts of mining, and my desire to see improvement in the sustainability performance of mining companies, were prompted initially by what I saw in my home country, Ghana. It has been evident in my inquiries for this study that mining is of necessity invariably messy, entailing the disturbance of nature, including the land (or sea) and the flora and fauna occurring on this land, and workers and other people participate in this messy process. Mess occurs regardless of the circumstances of the mining area and the mining process, although the nature and extent of the mess seems to vary with the process. However, while some discretion applies in the choice of process used and the details of how it is implemented, mostly the choice depends on the materials being mined and the natural circumstances of the mine site. In this
section, I outline the different mining processes, paying particular attention to the processes available to mine gold in the circumstances prevailing in Damang and similar mines.

![Figure 4.1: Open pit mine](Source: Gold Fields, 2017)

Similar to the global mining sector, there are three main types of mining in Ghana, namely, open-pit, placer and underground. *Open-pit mining* applies where the ore deposit stretches very deeply into the ground, necessitating the removal of layer upon layer of surface soil and ore (Harraz, 2016; Osterkamp & Joseph, 2000). Mostly, open pit mining involves logging of trees, clear-cutting or burning of vegetation above the ore deposit, followed by employing heavy machinery such as bulldozers and dump trucks, in removing overburden (Chen, Li, Chang, Sofia & Tarolli, 2015; Martín-Duque et al., 2010). Chen et al. (2015) claim that “open-pit mines and quarries are considered the most dangerous industrial sector, with injuries and accidents occurring in numerous countries” (p. 76). Figure 4.1 shows an example of an open-pit mine.
Placer mining (also known as surface mining) is employed when the ore deposit is associated with sediment in stream beds, river valleys, beaches, river and lake beds or in floodplains (Chalov, 2014). Placer mining involves the use of bulldozers, dredges, or hydraulic jets to extract the ore from the ground (Nelson, 2018). Figure 4.2 presents an image of a placer mine.

![Image of placer mining](Source: Goldbottom Mine Tour, 2013)

As a result of the extraction of the deposit of ores from river beds and beaches, placer mining is considered environmentally hazardous, as the extraction process pumps out large quantities of sediment that can impact surface water for several miles downstream (Chalov, 2014; Nelson, 2018).

According to Harraz (2010), underground mining requires the removal of a minimal amount of overburden to gain access to the ore deposit by tunnels or shafts (see Figure 4.3). By employing underground mining methods, sections or blocks of rock are removed in vertical strips that create a connected underground hole that is usually filled with cemented aggregate and waste rock (Montiel, Dimitrakopoulos & Kawahata, 2016). The main impacts of
underground mining activities on the surface are subsidence and slope deformation with other impacts on the groundwater and surface water, spring, lakes and rivers (Altun, Yilmaz & Yildirim, 2010; Harraz, 2016). Another dangerous part is the frequent collapse of underground mines on miners who in most cases are not saved (Harraz, 2016). There are also situations where the population are disturbed from blasting activities and dust from mining vehicles, if roads on mining premises are unsealed.

Figure 4.3: Underground mining
(Source: Mining Review Africa, 2016)

4.2.3. Ghana’s mining sector

In this section, I describe a little of Ghana’s geography and history. I focus on macroeconomics and mining and then examine the regulatory framework of Ghana’s mining sector.
4.2.3.1. Geographic and political status of Ghana

Figure 4.4: The location of Ghana in Africa

(Source: Eezy Inc., 2018)

Evidence from archaeology suggests that present-day Ghana was inhabited as early as 3,000 to 4,000 years ago (GhanaWeb, 2018). The modern country of Ghana is the former British colony known as the “Gold Coast” (Hilson, 2002; McLaughlin & Owusu-Ansah, 1994); its name was changed after independence in 1957 (Miller, Vandome & McBrewster, 2009; Ward, 1966). Ghana is located in West Africa on the Gulf of Guinea Coast. The Gulf of Guinea and the Atlantic Ocean being to the south, it shares an eastern border with Togo, western border with Cote d’Ivoire and northern border with Burkina Faso (see Figure 4.4) which are all French speaking nations (Boateng, 1996; Hilson et al., 2014; McSweeney et al., 2010). The country derives its name from the ancient Kingdom of Ghana, located between the Senegal and Niger
Rivers to the north of Accra. Ghana was the title of the ancient empire’s king and so Arab traders used to apply the name Ghana to the capital and the state (Hilson, 2002). Ghana is 239,460 square kilometres in size and reported to have a population of about 29.6 million as at March 2018 (Citifm, 2018).

4.2.3.2. Regions of Ghana, sizes and their capital cities

Ghana is divided into ten regions, namely, Northern, Brong-Ahafo, Ashanti, Western, Volta, Eastern, Upper West, Central, Upper East and Greater Accra. Figure 4.5 shows the political map of Ghana indicating the regions and their capital cities.

![Figure 4.5: Regions of Ghana and their capital cities](Source: GhanaWeb, 2018)

In terms of size, the Northern Region is the largest at 70,384 square kilometres and Greater Accra Region where the capital city of Ghana is located is the smallest, covering 3,245 square kilometres. Table 4.3 presents the sizes of the regions in descending order.
Table 4.3: Sizes of the regions in Ghana

<table>
<thead>
<tr>
<th>Rank</th>
<th>Region</th>
<th>Size (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Northern</td>
<td>70,383</td>
</tr>
<tr>
<td>2</td>
<td>Brong-Ahafo</td>
<td>39,557</td>
</tr>
<tr>
<td>3</td>
<td>Ashanti</td>
<td>24,389</td>
</tr>
<tr>
<td>4</td>
<td>Western</td>
<td>23,921</td>
</tr>
<tr>
<td>5</td>
<td>Volta</td>
<td>20,570</td>
</tr>
<tr>
<td>6</td>
<td>Eastern</td>
<td>19,323</td>
</tr>
<tr>
<td>7</td>
<td>Upper West</td>
<td>18,478</td>
</tr>
<tr>
<td>8</td>
<td>Central</td>
<td>9,826</td>
</tr>
<tr>
<td>9</td>
<td>Upper East</td>
<td>8,842</td>
</tr>
<tr>
<td>10</td>
<td>Greater Accra</td>
<td>3,245</td>
</tr>
</tbody>
</table>

(Source: Government of Ghana, 2018)

4.2.3.3. Ecological zones of Ghana

Ghana has a tropical climate, and is strongly influenced by the West African Monsoon (McSweeney, New & Lizcano, 2010), as vegetation is mainly determined by rainfall. Ghana has ten regions with six ecological zones namely: Sudan Savannah, Guinea Savannah, Forest Savannah Transition, Semi-Deciduous Rainforest, High Rainforest and Coastal Savannah (Issah et al., 2011) (see Figure 4.6). The Guinea Savannah zone has a single rainfall season lasting from May to October with annual rainfall being about 1000 mm. The Sudan Savannah has an annual rainfall of between 500 and 700 mm. The Forest Savannah Transition has an annual rainfall of about 1200 mm and the Semi-Deciduous 1400mm. The Coastal Savannah has only one rainy season of about 600 mm. Figure 4.6 shows the regions in Ghana, their capital cities and their ecological zones. The High Rain Fall Zone has an annual rainfall over 2000mm
The mine site for this research is in the Western Region which fall within the High Rainfall Zone.

Ghana is considered to be relatively rich in animal life, although it has been reduced by hunting and the spread of human settlement. Large mammals include lions, wild hogs, hyenas, antelope chimpanzees, leopards, elephants, buffalo, and many kinds of monkeys. There are several types of snakes such as cobras, pythons, puff adders, and green mambas. Aquatic creatures such as crocodiles, sea cows, and otters are found in the rivers and lagoons (Boateng, Fage, Davies & Maier, 2018).

There are also numerous birds including parrots, eagles, kites, herons, hornbills, kingfishers, cuckoos, vultures, snakebirds, sunbirds, and egrets. The ocean, rivers, and inland lakes are full
of fish and other forms of aquatic life (Boateng et al., 2018; Hall & Swaine, 2013). Fishes include sardines (locally known as herrings), anchovy, tuna, mackerel, sole, skate, mullet, bonito, flying fish, lungfish, elephant fish, sea bream, and shark (Boateng et al., 2018; Hall & Swaine, 2013). Harmless insects include beetles, butterflies, fireflies, ants, termites, crickets, and bugs. Some dangerous insects in Ghana are mosquitoes, tsetse flies, and blackflies which are responsible for transmitting malaria, yellow fever, and trypanosomiasis respectively (Ahorlu, Dunyo, Afari, Koram & Nkrumah, 1997; Boateng et al., 2018).

4.2.3.4. Political and economic history

As inferred in the reference above to an ancient empire of Ghana, the population of the area derived most of its power and wealth from gold mining and from related trading along the trans-Saharan trade routes with merchants from North Africa who were mostly Arabs (Roe & Samuel, 2007; Pakenham, 1999). From the late 15th century, the emerging trading and commercial powers from Europe, particularly Portugal, Denmark and Great Britain, became increasingly interested in the region (Doortmont, 2001; Austin, 2007). The Europeans were initially attracted by gold, but this switched to slavery from the early 17th century until the 1860s when slavery ended (McLaughlin & Owusu-Ansah, 1994). Ghana was a major slavery trading centre, with European powers working with local kingdoms and chiefs to bring slaves from Ghana’s interior and transport them to the West Indies and North America (Bredwa-Mensah, 2008).

The historical significance of mining in the socio-economic development of Ghana is considerable and well documented, with the country’s colonial name, Gold Coast, reflecting the importance of the mining sector, particularly the gold trade, to the country (Agbesinyale, 2003; Akabzaa, 2000).
4.2.3.5. A brief history of mining in Ghana

Ghana’s long tradition of gold mining is reflected in the estimate of 80 million ounces of gold having been produced between the first documentation of gold mining in 1493 and 1997 (Kesse, 1985; Ghana Chamber of Mines, 1998). The country’s total gold output (8,153,426 ounces) between 1493 and 1600 accounted for 36% of the world’s total gold output (Tsikata, 1997). Formal gold exploration and mining in Ghana began in the 19th century when Ghana was colonised by the Europeans (Kesse, 1985). The first European gold concession in Ghana was issued in Western Region (Tarkwa) in 1877, and in 1897, the first gold mining company, Ashanti Gold Fields Company Limited, was established (Akoto et al., 2014). Mining companies such as Abosso (1896), Bibiani (1901), Prestea (1903) and Tarkwa (1909), all in the South Western part of Ghana, were also established soon afterwards.

By the mid-20th century, Ghana was among Britain’s more prosperous African colonies and was identified as an early candidate for independence in the years after World War II (Austin, 2007; Miller, 1979). This was because Britain and the other colonial powers were under pressure to divest themselves of their colonies under demands from the UN and from the local citizens (McLaughlin & Owusu-Ansah, 1994). It is possible that Britain granted independence to Ghana as the British realised economic exploitation prospects were unsustainable: gold production after the World War II experienced a virtual collapse (Hilson, 2002). This resulted in the Gold Coast and the neighbouring British trust territory of Togoland (formerly part of the German colony which was divided between Britain and France after World War I) achieving independence in March 1957 (Kesse, 1985; Koonar, 2014). The new nation, named Ghana, was the first African colony to achieve independence (Hilson, 2002).
In spite of its economic potential, the output of the mining industry in Ghana decreased significantly between the late 1950 and 1980 with the production of gold experiencing the most dramatic decline. Aryee (2001) argues:

“for four decades up to the 1980’s no new mine was opened in Ghana due to variety of challenges faced by mining sector investors and potential investors alike, as a result of the economic, financial, institutional and legal framework within which the mining sector operated” (p. 62).

The Gold Coast’s value of gold output from 1951-1959 was about two-thirds of that of ten years earlier (Hilson, 2002). Eleven of the 50 gold mining companies based in Ghana in the 1930s were still in operation but most of their mines had deteriorated. Acquah (1995) claims that these companies negotiated for government grants and loans to revamp their operations but were turned down. In fact, “Ghana’s attainment of its independence in 1957 marked the beginning of a period of rapid deterioration in its gold mining sector” (Hilson, 2002, p. 22). In 1958, the Government decided to take a commanding control of the industry by appointing the Ghana Mineral Commission to enquire into the terms of the industry’s mineral rights, its profitability, and the status of unexploited concessions (Tsikata, 1997). The Government, acting on many of the Commission’s recommendations, first established the State Mining Company with the mandate of managing the mining firms. Incorporated on 1 March 1961, the State Mining Company took control of five gold mines previously under British control, and by 1966 had acquired eight more mining companies, including Ashanti Gold Fields, which was the largest gold mine.

In 1969, the Ashanti Gold Fields Company was taken over by the Lonrho Group, a multinational conglomerate, leading to a joint management agreement being reached between the Ashanti Gold Company and the Ghana government (Dumett, 2015). However, by 1976
gold mine production in Ghana, at 581,694 ounces, was approximately 60% of the 900,000 ounces output of 1960 (UN, 1977), indicating a continuous decline in production, despite the actions taken by the Government, reaching a 50-year low in 1982 (232,000 ounces). Until 1983, efforts of successive governments to nationalise the mining sector with the hope of revamping it proved futile (Addy, 1998; Boafo-Arthur, 2000; Hilson, 2002; Tsikata, 1997).

Having recognised the potential for mass revenue generation in the mining industry, the Government launched an Economic Recovery Plan in 1983, with the support of the International Monetary Fund (Hilson, 2002). The main objective of the recovery plan was to invite the private sector back into mining operations, in order to overcome the challenges hindering the growth of export revenues from mining. Production increased 700% in the next decades, and by 2002, gold accounted for 37% of national exports and 97% of mineral exports, being the country’s most important economic product (Hilson, 2002). See Figure 4.7 for Ghana’s gold production from 1980-2000.

![Figure 4.7: Gold production in Ghana (1980-2000)](image)

(Source: Hilson, 2002, p. 24)
By the beginning of this century, Ghana was the second largest gold producer in Africa after South Africa, the third-largest African producer of aluminium metal, with significant magnesium, bauxite, diamond and oil outputs (Coakley, 1999; Fliess, Idsardi & Rossouw, 2017). Nevertheless, these economic prospects came with social and environmental challenges especially to communities around the mines (Akoto et al., 2014).

Today, gold dominates the mining sector in Ghana with prospective gold deposits being confined to the south-western part of the country (Bortey-Sam, 2014). Figure 4.8 presents the geology of Ghana’s gold deposits with major gold producers and locations.

![Figure 4.8: Ghana's gold deposits, major gold producers and locations](Source: Pelangio Exp. Inc., 2016)
About one-third of the total land area in the Western Region is under concession to mining companies and the Tarkwa area in the Wassa West District of Ghana is said to have the single largest concentration of mines and mining companies on the African continent (Akabzaa & Darimani, 2001; Akoto et al., 2014).

Ghana’s mining sector has been affected by the recent decline in the world gold price (Boye, 2014). Spot gold prices had fallen from an all-time peak of nearly $1,900 an ounce in September 2011 to a more than three-year low of about $1,200 in December 2013 (Oxford Business Group, 2014), rising to a price of $1,281 by April 2017. Although many analysts expected that by 2016 a recovery would be in full swing and prices on the rise again, at April 2017, the price was still low. This has affected revenues for the global mining industry, including Ghana’s.

4.2.3.6. Structure of Ghana’s mining industry

The structure of the mining industry derives largely from the implementation of the Economic Recovery Plan of 1983 and can be characterised as a pyramid comprising the various private companies in the sector. The top of the pyramid comprises a few large companies with head offices in Canada, Australia, South Africa and the US. There are, however, smaller investors from the United Kingdom, Norway and China. Thus, 85% of the industry is owned by foreigners with the rest being held by the State of Ghana and several small scale private Ghanaian operators. Figure 4.9 presents distribution of Ghana Chamber of Mines Member Companies in total gold output.
Aryee (2001) argues that, despite the existence of support service suppliers to the mines (a total of some 60 companies at the time he was writing, providing geological, drilling and engineering services), most inputs were imported and at the same time ores were exported unprocessed. This has not changed that much. For example, in 2013, for every one dollar released for the export of minerals, 0.54 dollars were used to defray importation cost, meaning that the mining sector spent $1.8 million to purchase inputs brought into the country, whilst $35.6 million was used to import consumables, out of the $4.78 billion released for the export of minerals (Boye, 2014).

All the mines in Ghana are doing surface mining (see Table 4.4). The district capital of Wassaw West in the Western Region, Tarkwa, has the highest concentration of mining companies in Ghana, the West African sub-region and possibly the African continent (Akabzaa and Darimani, 2001; Ibrahim, 2013). Out of the 11 large-scale mines in Ghana seven are located in the Tarkwa Township, producing a significant proportion of the country’s gold output. The only manganese mine in the country is also located in this area.
Table 4.4: Profile of leading gold mines currently operating in Ghana

<table>
<thead>
<tr>
<th>Mining Company</th>
<th>Locations</th>
<th>Starting date</th>
<th>Mining/ processing method</th>
<th>Average annual output (,000 metric tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Fields Ghana Ltd of South Africa (GFG)</td>
<td>Tarkwa (WR)</td>
<td>1993</td>
<td>Open-Pit/Heap leach</td>
<td>27,800</td>
</tr>
<tr>
<td></td>
<td>Damang (WR)</td>
<td>1997</td>
<td>Open-Pit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abosso (WR)</td>
<td>1997</td>
<td>Open-Pit</td>
<td></td>
</tr>
<tr>
<td>Anglo Gold Ashanti of South Africa (AGA)</td>
<td>Obuasi (AR)</td>
<td>2004</td>
<td>Open-Pit/Underground</td>
<td>25,800</td>
</tr>
<tr>
<td></td>
<td>Iduapriem (WR)</td>
<td>1992</td>
<td>Open-Pit /Heap leach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bibiani (WR)</td>
<td>1997</td>
<td>Open-Pit</td>
<td></td>
</tr>
<tr>
<td>Golden Star Resources Ltd of Canada (GSR)</td>
<td>Bogosu (WR)</td>
<td>1990</td>
<td>Open-Pit</td>
<td>14,300</td>
</tr>
<tr>
<td></td>
<td>Akyem (WR)</td>
<td>2005</td>
<td>Open-Pit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preastea (WR)</td>
<td>1995</td>
<td>Open-Pit/Underground</td>
<td></td>
</tr>
<tr>
<td>Newmont Ghana Gold Ltd of Denver USA.</td>
<td>Ahafo (BA)</td>
<td>2006</td>
<td>Open-Pit</td>
<td>31,100</td>
</tr>
<tr>
<td></td>
<td>Akyem (ER)</td>
<td>2011</td>
<td>Open-Pit</td>
<td></td>
</tr>
<tr>
<td>Perseus Mining Ltd. of Australia</td>
<td>Edinkan (AR)</td>
<td>2012</td>
<td>Open pit</td>
<td>7,200</td>
</tr>
<tr>
<td>Noble Mineral Resources of Australia (NMR)</td>
<td>Bibiani (WR)</td>
<td>2010</td>
<td>Open pit</td>
<td>3,400</td>
</tr>
<tr>
<td>Kinross Gold Company of Canada (KGC)</td>
<td>Bibiani (WR)</td>
<td>2010</td>
<td>Open-Pit/Underground</td>
<td>9,000</td>
</tr>
<tr>
<td>Artisanal and small-scale gold miners by indigenous Ghanaians and some foreigners mainly Chinese</td>
<td>Across Ghana</td>
<td>Since ancient days</td>
<td>Open Pit/Underground</td>
<td>&gt;10,000</td>
</tr>
</tbody>
</table>

Key: BA- Brong Ahafo Region, WR- Western Region, AR-Ashanti Region, ER- Eastern Region
(Source: Akoto et al., 2014)
The lack of local mining companies largely reflect legal restrictions on small scale mining as a result of their inability to restore disturbed lands after mining operations (Akabzaa & Darimani, 2001) as well as the capital intensity of the sector. According to Carson et al. (2005), the large majority of Ghanaian miners are artisanal, using tools to dig for gold without an official licence (>85%), thus, working illegally. These miners are locally known as *galamsey* operators, which came out from the phrase ‘gather and sell’ (Hilson, 2013; Rambaud et al., 2000). According to Tschakert (2009):

> Due to their encroachment on concession land most of which has been leased to national and multinational companies by the Ghanaian Government, the use of highly toxic mercury in the gold extraction process, and the social disruption that results from the temporary and migratory nature of their work, these miners have been increasingly marginalized and even criminalized (p. 24).

This reason would seem to suggest that larger foreign multinational companies are more reliable when it comes to environmental protection and rehabilitation and restoration, which is yet another reason to carry out this study and findings answers to the questions it addresses.

### 4.2.3.7. Governance and regulatory bodies in the mining industry

Dimensions of Ghana’s mining industry are overseen by various government bodies. These include The Ministry of Lands and Natural Resources, through the Geological Survey Department, the Minerals Commission, Precious Minerals Marketing Co. Ltd, and government agencies such as the Environmental Protection Agency of the Ministry of Environment, Science, Technology and Innovation and Water Resource Commission of the Ministry of Water Resources (Ghana Chamber of Mines, 2014). The Ghana Minerals Commission was established in 1958 as the lead institution to regulate the mining sector, amend existing legislations, develop guidelines and standards for monitoring environmental issues and make
recommendations on mineral policies (Twerefou, Osei-Assibey & Senadza, 2015). Through its Inspectorate Divisions, the Ghana Minerals Commission (established in 1992) and the Environmental Protection Agency (established in 1994) enforce environmental, health, and safety standards in the country’s mines and ensure that mining companies and mining-related activities comply with Ghana’s mining and mineral laws. The Precious Minerals Marketing Company (established in 1963) is responsible for promoting the country’s precious minerals and jewellery industry (Amankwah & Anim-Sackey, 2003). In addition, all mine accidents and other safety problems must be reported to the Ghana Chamber of Mines (established in 1928), a private association of operating mining companies. Table 4.5 presents the major regulatory bodies in Ghana’s mining sector, dates of establishment and their roles.

The Chamber also provides information on Ghana’s mining laws to the public and negotiates with the mine labour unions such as the Ghana Mines Workers Union on behalf of its member companies (Bermúdez-Lugo, 2016). The Ghana Mines Workers Union (established in 1994) seeks to protect and advance the socio-economic, political and security interests of its members. International bodies such as the International Council on Mining and Metals (established in 2001) and the Mining, Minerals and Sustainable Development Project (established in 2002) assess sustainable mining practices by mining companies (Fonseca et al., 2014).
Table 4.5: Major institutions in Ghana’s mining sector and their roles

<table>
<thead>
<tr>
<th>Year of establishment</th>
<th>Institution</th>
<th>Role in the mining sector of Ghana</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913</td>
<td>Geological Survey Department</td>
<td>Geological studies including map production and maintenance of geological record</td>
</tr>
<tr>
<td>1963</td>
<td>Precious Minerals Marketing Company</td>
<td>Promote trading cost-effectively in gold and diamonds locally and internationally, efficiently producing quality jewellery through highly skilled and motivated staff to ensure customer satisfaction and enhance shareholders value</td>
</tr>
<tr>
<td>1992</td>
<td>Lands Commission</td>
<td>Legal records of licences and legal examination of new applications</td>
</tr>
<tr>
<td>1992</td>
<td>Ministry of Lands and Natural Resources</td>
<td>Overall responsibility for the mining industry</td>
</tr>
<tr>
<td>1992</td>
<td>Minerals Commission</td>
<td>Recommend mineral policy; first contact for prospective investors</td>
</tr>
<tr>
<td>1992</td>
<td>The Forestry Commission</td>
<td>Implementing protection, development, management and regulation of forests and wildlife resources and provide for related matters</td>
</tr>
<tr>
<td>1994</td>
<td>Ghana Mines Workers Union</td>
<td>Protecting and advancing the socio-economic, political and security interests of its members</td>
</tr>
<tr>
<td>1994</td>
<td>Environmental Protection Agency Ghana</td>
<td>Overall responsibility for environmental issues related to mining</td>
</tr>
<tr>
<td>2001</td>
<td>International Council on Mining and Metals</td>
<td>Continually improve the sector and bring the many issues to the forefront to be resolved in the future; to work alongside all their shareholders and in turn create new and prosperous relationships with them.</td>
</tr>
</tbody>
</table>

(Source: Mbendi, 2016)

There is also a challenge associated with whether or not to process gold before export. There is little actual refining of gold in Ghana. Gold ores are mined and the metal extracted at the mines is processed to the stage of semi-pure ore bars; these are then sold and transported for further refining in advanced economies (Bloch & Owusu, 2012). The Precious Minerals
Marketing Company is primarily involved in assaying, purchasing and exporting gold for its approximately 750 gold buyer clients operating in mining areas in the country buying gold from licensed small-scale producers (defined as those working concessions of up to 25 acres). According to Bloch & Owusu (2012), even though there are local blacksmiths who refine and process gold, there are few prospects for refining in Ghana because of the following factors:

i. Higher prices of gold in the world market have resulted in a decline in jewellery consumption of gold.

ii. Local jewellery making has a long tradition but is still dependent on older traditional technology.

iii. There is low local demand for gold jewellery due to a changing cultural attitude to the use of jewellery as an investment – in effect, the middle classes have changed to investing in real estate.

iv. There have been increases in cheap jewellery imports from Asia and the Middle East.

Although Ghana’s mining industry has managed to avoid a significant decline in activity, the challenging conditions have prompted some mining companies to trim their operations. For example, in May 2014, AngloGold announced plans to temporarily close and re-structure its loss-making Obuasi mine in Ashanti, as a result of the losses due to the fall in gold prices (Oxford Business Group, 2014). Recently, in 2015, Gold Fields announced it might be forced to lay off over 2,000 Ghanaian workers if gold prices on the global market do not recover (GhanaWeb, 2017).

4.2.3.8. Mining sector policy and legal framework

The history of Ghana’s mineral policy can be traced back to Britain’s colonial rule of the Gold Coast (Bermúdez-Lugo, Mobbs, Newman & Taib, 2013; Tsikata, 1997). As indicated in section 4.2.3.6, the private sector entered the industry in 1983. Since then, the mining sector of
Ghana has received more attention from the Ghana government and international bodies than any other sector in the country under the Economic Recovery Programme of 1983 (Ghana Chamber of Mines, 2015). The Economic Recovery Programme was supported by international agencies including the International Monetary Fund and the World Bank, and the country has received a massive inflow of loans and development funds (Helleiner, 1992). For instance, since then, the World Bank’s International Development Association has provided technical, technology and organisational support for policy, institutional reform programmes, and investment supporting the recovery of the economy (Hilson, 2002). For example, the International Development Association commissioned the US$90 million *Mining Sector Rehabilitation Project*, which was to rehabilitate and privatise the state-owned gold mines in the country (Hilson, 2002). By the end of 1994, International Development Association funding in Ghana’s mining sector totalled US$2.86 billion, to help small-scale miners and to strengthen regulators (World Bank, 1995).

Apart from the general macro-economic policy reforms for the country, there were specific sector policy reforms that sought to boost local and foreign investors’ interest and confidence in the mining sector (see Table 4.6). For example, between 1984 and 1995, there were vital institutional developments and changes in government policies that offered good incentives to investors to reflect the new paradigm (Amponsah-Tawiah & Dartey-Baah, 2011). The setting up of the Minerals Commission in 1984, the promulgation of the minerals and mining code for prospective investors in 1986, a small-scale mining law in 1989 and the establishment of the Environmental Protection Agency in 1994 expanded the mining industry’s activity in Ghana.
Table 4.6: Legislation and reforms governing Ghana’s mining sector

<table>
<thead>
<tr>
<th>Year</th>
<th>Legislation and reforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>Minerals and Mining Law, PNDCL 153</td>
</tr>
<tr>
<td>1986</td>
<td>Establishment of the Minerals Commission, PNDCL 154</td>
</tr>
<tr>
<td>1987</td>
<td>Minerals (Royalties) Regulations, LI 1349</td>
</tr>
<tr>
<td>1989</td>
<td>Small-scale Gold Mining Law, PNDCL 218 1989</td>
</tr>
<tr>
<td>1989</td>
<td>Precious Minerals Marketing Company Law, PNDCL 219</td>
</tr>
<tr>
<td>1989</td>
<td>Establishment of Precious Minerals Marketing Company</td>
</tr>
<tr>
<td>1994</td>
<td>Establishment of Environmental Protection Agency</td>
</tr>
<tr>
<td>1994</td>
<td>Drawing up of mining environmental guidelines</td>
</tr>
<tr>
<td>1994</td>
<td>Minerals and Mining (Amendment) Act (Act 475)</td>
</tr>
<tr>
<td>1994</td>
<td>Review of mining environmental guidelines</td>
</tr>
<tr>
<td>1992 to 1999</td>
<td>Divestiture of state-owned mines</td>
</tr>
<tr>
<td>2006</td>
<td>Minerals and Mining Act (Act 703)</td>
</tr>
<tr>
<td>2010</td>
<td>Minerals and Mining (Amendment) Act (Act 794)</td>
</tr>
<tr>
<td>2012</td>
<td>Minerals and Mining (General) Regulations, LI 2173</td>
</tr>
<tr>
<td>2012</td>
<td>Minerals and Mining (Support Services) Regulations, LI 2174</td>
</tr>
<tr>
<td>2012</td>
<td>Minerals and Mining (Compensation and Resettlement) Regulations, LI 2175</td>
</tr>
<tr>
<td>2012</td>
<td>Minerals and Mining (Licensing) Regulations, LI 2176</td>
</tr>
<tr>
<td>2012</td>
<td>The Minerals and Mining (Health, safety and Technical) Regulations LI 2182</td>
</tr>
<tr>
<td>2012</td>
<td>Minerals and Mining (Explosives) Regulations LI 2177</td>
</tr>
</tbody>
</table>

(Source: Akabzaa & Darimani 2001)

In addition to the regulatory framework which was developed through the laws and institutions, generous incentives were provided to foreign investors to boost foreign direct investment in mining (Akabzaa, 2000; Iddrisu & Tsikata, 1998). This resulted in the private sector investments in the mining sector with the government selling out the majority shares of state-owned mines to private companies, most of which were foreign companies. Corporate income
tax on mineral production of private companies in Ghana decreased from 50-55% in 1975 to 45% in 1986 and has been 35% from 2012 to 2018 (Akabzaa & Darimani, 2001; Campbell, 2003). Companies received waivers of import duties from the Government of Ghana on equipment and accessories necessary for mining production.

Additionally, mining companies were allowed to keep a minimum of 25% of foreign exchange in an external account for various purposes including acquiring physical capital requirements necessary for production and to make dividend payments as well as to pay expatriate labour. Consequently, the government replaced the Minerals and Mining Law, 1986, PNDCL 153 in 2006 with the Minerals and Mining Act (Act 703) which aimed to bring in foreign investment. It offered favourable terms to investors by reducing government carried interest in new mining firms to 10% and it introduced stability clauses (Akabzaa & Darimani 2001; Bekhet & Mugableh, 2013). However, Act 703 was also amended in 2010 with the Minerals and Mining (Amendment) Act (Act 794). A strong urge to boost local involvement in mining resulted in the latest piece of legislation in 2012: The Minerals and Mining (General) Regulations (LI 2173) requires mineral rights holders to procure goods and services of Ghanaian origin to the maximum amount possible (Ghana Chamber of Mines, 2015; Omayra Bermúdez-Lugo, 2016).

4.2.3.9. The Environmental Protection Agency's Performance Rating Disclosure

The Environmental Protection Rating Disclosure, Akoben, is an Environmental Protection Agency initiative through the Ghanaian government that reports on manufacturing and mining organisations. The rating system provides a coloured rank of the organisation for each compliance item. Akoben is a symbol of the vigilance and wariness of the Ghanaian Akan ethnic group, implying a set of behaviours that is appropriate for corporate sustainable development practices. As one of the proactive steps to ensure compliance, Ghana’s Akoben programme is the first sustainability performance rating and public disclosure programme in
Africa (Darko-Mensah & Okereke, 2013). This rating of disclosures is an effort to improve governance on various domains of public and private enterprise in Ghana towards sustainability (National Development Planning Commission, 2010), as well as Ghana’s Environmental Protection Agency’s attempt to embrace the recent global trend in sustainability which includes increasing transparency (Gupta, 2010; Darko-Mensah & Okereke, 2013), accountability (Haufler, 2010) and public involvement (Gupta, 2008). For mining organisations, Akoben ratings include environmental and social dimensions of sustainability. Environmental dimensions include compliance with standards for permits and reporting, water and air quality, hazardous waste storage, accidents and spills. The social dimensions involve policies for community development (Environmental Protection Agency Akoben, 2012).

In the Akoben program, the environmental and social performance of mining and manufacturing operations is assessed using five colour rating levels: gold, green, blue, orange and red, each indicating environmental and social performance ranging from excellent to poor respectively (see Table 4.7). The gold, green and blue ratings publicly recognise good performing companies, while red and orange ratings bring public pressure on companies to hastily improve their performance.

The rating system evaluates several performance indicators that include quantitative data as well as qualitative. Since the first Akoben report in 2009, many companies have become committed to submitting the requisite data in order to be included in the rating, serving now as a positive advocacy tool for some civil society groups in Ghana (Essah & Andrews, 2016).
Table 4.7: Akoben environmental and social performance indicators

<table>
<thead>
<tr>
<th>Rating level</th>
<th>Performance</th>
<th>General description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Excellent</td>
<td>Commitment to CSR [corporate social responsibility]</td>
</tr>
<tr>
<td>Green</td>
<td>Very good</td>
<td>Applies best practices</td>
</tr>
<tr>
<td>Blue</td>
<td>Good</td>
<td>Adequate compliance</td>
</tr>
<tr>
<td>Orange</td>
<td>Unsatisfactory</td>
<td>Not in compliance</td>
</tr>
<tr>
<td>Red</td>
<td>Poor</td>
<td>Creates risks from toxics and operates below regulatory standard</td>
</tr>
</tbody>
</table>

(Adapted from Environmental Protection Agency, 2012)

4.3. Sustainability, Ghana’s mining industry and organisational profile

In this section, I relate sustainable development to the global mining sector and narrow that down to Ghana, by outlining the practices and standards in the sector. I go further to criticise the conventional presentation, questioning the structure and economic contribution of mining practice in particular.

4.3.1. Sustainable development practices and the mining industry

As indicated in chapter 3, the mining industry is classified as a sector in which sustainable development is a key issue in the debates that occur within responsible companies (Ali & O'Faircheallaigh, 2017; Kepore & Imbun, 2011; Viveros, 2016). Mining outputs and benefits have an immense impact on economic growth (Viveros, 2016), particularly in developing economies endowed with natural resources (Dorian & Humphreys, 1994). Right from establishment through to production, mining activities are noted to have irremediable effects on the landscape and potential long-term repercussions on the ecological environment (O'Faircheallaigh & Ali, 2017), and the social economy of nations and nationals (Viveros, 2016). Health conditions are among the problems that must be addressed continually (Sagebien & Lindsay, 2011).
Table 4.8: Environmental hazards of mining activities

<table>
<thead>
<tr>
<th>Mine Creation</th>
<th>Extraction</th>
<th>Smelting &amp; Refining</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Deforestation and destruction of animal habitats, particularly in the process of making charcoal from wood</td>
<td>• Creation of mine waste with toxic emissions</td>
<td>• Major energy consumer</td>
</tr>
<tr>
<td>• Use of native land and officially protected natural areas</td>
<td>• Water table contamination:</td>
<td>• Major air polluter</td>
</tr>
<tr>
<td>• Creation of potentially toxic waste rock</td>
<td>• Tailing dam failures</td>
<td>• Primarily releases nitrogen and sulphur, major components of smog and acid rain</td>
</tr>
<tr>
<td></td>
<td>• Disposal in rivers and oceans</td>
<td>• Releases greenhouse gases including CO2 and PFCs</td>
</tr>
<tr>
<td></td>
<td>• Deep water disposal</td>
<td>• Also emits lead, arsenic, cadmium and zinc</td>
</tr>
<tr>
<td></td>
<td>• Acid mine drainage: sulphides in waste rock react with water to produce sulphuric acid</td>
<td>• Contributes to lead poisoning, respiratory illnesses and possibly other diseases</td>
</tr>
<tr>
<td></td>
<td>• Linked with skin cancer and tumours, liver disease, nerve damage, and growth retardation in children</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Damages water supply and marine life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Considered irreversible and few treatment options exist</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Lins & Horwitz, 2007, p. 10)

In this regard, multinational enterprises engaged in mining are under intense pressure and scrutiny from various stakeholders in response to concerns about sustainable development impacts of operations, especially in developing countries (Warhurst & Mitchell, 2000; Viveros, 2016; Warhurst, 2001; Kapelus, 2002). Table 4.8 presents environmental hazards claimed to be associated with mining.

Nevertheless, it has been argued that mining can become more sustainable by developing and integrating sustainability standards which promote practices that reduce the environmental and social impact of mining operations and prioritising these dimensions equally to financial goals, so that at the close of a mine, life around the mine can continue (Dashwood, 2013).
As a result of some of the identified hazards the mining sector poses to humanity and the ecology, several standards have been developed. The next section provides the state of sustainability standards and a review of studies on sustainable development in the mining sector.

4.3.2. Standardisation of sustainable development practices in the mining sector

Commencing in the early 1990s, a few leading mining companies from developed countries began to publish stand-alone reports relating to their environmental and health and safety performance (Scott, 2000). The gravity of external pressures to a large extent accounts for the mining sector’s drive to embrace voluntary initiatives towards sustainable development (Powell & DiMaggio, 1991; Scott & Meyer, 1994). In the midst of a mounting and ever louder pressure on mining, several Chief Executive Officers (CEOs) of leading mining companies launched the Global Mining Initiative (GMI) in 1999. The GMI was mandated to conduct a two-year study on the contribution of mining to sustainable development, known as the MMSD project (Mining Metals and Sustainable Development [MMSD], 2002). This was followed in 2001 by the creation of the International Council on Mining and Metals (ICMM), to replace the International Council on Mining and the Environment (ICME), founded in 1991 (Dashwood, 2013).

According to Durant and Fiorino (2017), the origin of environmental problems on the part of corporate organisations is the lack of environmental management policy (e.g. ISO [International Organization for Standardization] 9001 and ISO 14001 series), and social accountability standards (e.g. AA1000 and SA 8000). According to Rondinelli & Vastag (2000) “Many of the world's largest multinational corporations have certified their environmental management systems (EMS)” (p. 499). Sustainability certification of the mining sector is a novel area that applies tools like standards and codes that define practices in
companies and across the sector, and indicators and metrics adopted in assessing sustainable development performance (Young, Zhe & Dias, 2014).

Although these standards are technically “voluntary”, these programmes consist of rules that members of the ICMM, have agreed to undertake (Dashwood, 2013). The ICMM has actively promoted sustainable development for mining companies, framing their social and environmental policies, and providing guiding initiatives to improve their sustainable development performance. Standards on management practices such as ISO 14001 and OHSAS [Occupational Health and Safety Assessment Series] 18001 have become commonplace at facility levels (Arimura, Hibiki & Katayama, 2008; Boiral & Gendron, 2011; Granly & Welo, 2014).

Aside from the ICMM, regional bodies such as the Ghana Chamber of Commerce have developed global, regional and country codes of practice applicable to the implementation of control systems, the central purpose of which is to manage mining organisations’ environmental and social responsibility (Chowdhury, Prajogo & Jayaram, 2017; King, Lenox & Terlaak, 2005; KPMG, 2013). Other standards have also been adopted on sustainability reporting. The GRI framework is the most widely accepted standard, mainly aimed to improve the trustworthiness and transparency of social, environmental and economic reporting (Boiral & Gendron, 2011; KPMG, 2015).

The mining sector has also embraced integrated reporting to guide the mining sectors’ corporate social responsibility policies (Dashwood, 2013). According to the Global Mining Reporting Survey (KPMG, 2006), 40 of the world’s 44 major global mining companies produce annual sustainability reports. According to the GRI database, 102 mining companies published reports in 2011, 95% of which were based on the GRI (2012b) framework. In 2016 the percentage of mining firms that prepared sustainability reports had risen to about 80% (KPMG,
2017, p. 20). Beside the GRI, the mining sector is pursuing AA 1000 certificate for accountability (Fraser Institute, 2012).

Dashwood (2013) examined the stand-alone sustainability reports of ICMM member companies for the 2009 reporting year, to determine which standards are most commonly used by member companies of the ICMM. He found many standards in use: ISO 14001 environmental management standard, the GRI-G3 and the GRI’s Mining and Metals Sector Supplement, the IFC Performance Standard, the Extractive Industry Transparency Initiative (with government participation), the International Cyanide Management Code, OHSAS 18001 and the United Nations Global Compact (Dashwood, 2013). Table 4.9 outlines ICMM Members’ adoption of Global Voluntary Standards (2009).

Besides the adoption of sustainable developments standards, mining companies have made administrative changes. For instance, on the environmental side, internal initiatives include investment in research and development technologies, the development of environmental management systems and Environment Health Safety positions (Dashwood, 2013; Sanchez, 1998; Yakovleva, 2005). On the social sustainability side, employment practices designed to magnify worker health and safety have been adopted and mining companies operating in close proximity to local communities have developed routinised procedures for regular community consultation and engagement (Dashwood, 2013).
Table 4.9: ICMM Members’ adoption of Global Voluntary Standards (2009)

<table>
<thead>
<tr>
<th>Company</th>
<th>ISO 14001</th>
<th>GRI</th>
<th>ICMM</th>
<th>IFC performance standards</th>
<th>Global Compact</th>
<th>OHSAS 18001</th>
<th>ETI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARM</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Anglo American</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AngloGold Ashanti</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Barrick Gold</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BHP Billiton</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Freeport-McMoRan</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gold Fields</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lithium Gold Limited</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lonmin</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Mitsubishi Materials</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Newmont</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nippon Mining &amp; Metals</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>OZ Minerals</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sumitomo</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teck</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vale</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Xstrata</td>
<td>✓</td>
<td>✓</td>
<td>◼</td>
<td>◼</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>


(Source: Dashwood, 2013, P. 572)

Although the scope and technical requirements of these standards and initiatives appear commendable, previous research (Bebbington et al., 2014; Buhr et al., 2013; Gray, 2010; Unerman et al., 2007; Owen & O’Dwyer, 2005; Springett, 2003; Taleb, Gibson & Hovey, 2015) has indicated that organisations often fail to demonstrate convincingly their commitment to sustainable development practices and accountability for sustainability. Hence examining how mining companies operationalise sustainability and the role of accounting in these sustainable development initiatives will add to the sustainable development literature.
4.3.3. Sustainable development behaviours in the mining sector

Even though some oil exploration firms were listed as part of the world’s 100 most sustainable companies in 2014 (Forbes, 2014), it is notable that no gold mining firm was on this list. This could be because of the damage they cause to the environment (Bland, 2014; Schueler, Kuemmerle & Schröder, 2011). According to the World Bank (2002), the mining industry by its very nature always leaves indelible social, environmental and economic footprints wherever it finds itself. Ross (2001) concludes that the best option for poor economies is to utterly avoid the extraction of their natural resources and rather focus more on the agriculture of which, in effect, mining firms end up depriving these economies.

Drawing on new institutional and management standards literature, Raufflet, Cruz and Bres (2014) develop and explain the concept of “regulatory scripts”, described by the authors as the practices shared by a group of organisations in an industry in response to international frameworks and standards. The study found that the firms studied were very responsive to institutional corporate social responsibility expectations. Similarly, using the GRI framework, Boiral and Henri (2017) concede the impossibility of rigorously measuring and comparing the sustainability performance of firms from the same sector, which are supposed to be strictly following the same reporting guidelines. Levesque, Millar and Paraszczak (2014) review the frameworks that were used for energy-related reporting in the Canadian mining industry and compared them against international initiatives. The study concludes that there is no universally recognised standard and that this must be addressed in order to allow accurate comparisons to be made across sites and companies. Addressing the urgent need for standardisation, Danoucaras, Woodley and Moran (2014) use a robust and consistent framework for water in the minerals industry in documenting the robustness of the water accounting applied to a number of commodities and operating environments.
Cisneros and Christel (2014) give critical perspectives on mining resource control and governance in the developing world by exploring the practices of Argentinian and Ecuadorian companies. The authors conclude that economic interests subjugated the demand for more democratic decision-making in these countries. Similarly, in Russia, Didyk et al. (2018) study how knowledge about environmental, economic, cultural and social values and knowledge systems are applied in decision-making by stakeholders. The paper observed that “perceptions of sustainable development in these Russian industrial towns are shaped by the dominant role the mining industry plays on the Kola Peninsula in influencing the quality of life of local people and their perceptions of environmental concerns” (p. 102). In relation to this, Falck and Spangenberg (2014), using three case studies in different regions, propose a stakeholder-driven process for developing and testing a set of indicators for communicating the social and environmental impacts of a mining project. Bond (2014) introduces a very old concept with a new angle, i.e., the potential to employ knowledge about peace processes and peace-making to support sustainable development goals in mining communities and regions. The author makes a persuasive case for the inclusion of what she terms “positive peace” in the approaches adopted to achieve triple bottom line goals. Dougherty and Olsen (2014) observe that involving and building upon the local culture is critical to achieving sustainable development.

With growing awareness of the negative impacts of mining, pressure on mining companies is increasing from society as well as from the government to reduce their environmental and social repercussions (Sheng, Hartmann, Chen & Chen, 2015). Mining companies most often have responded positively to such pressures in an attempt to evade the slow-ups and shutdowns that have occurred frequently due to the underestimation of civil society's expectations of mining projects (Prno & Slocombe, 2012; Muduli et al., 2013). The mining sector has also begun to realise that their long-term survival and success rest on their ability to match their economic interests with societal values (Esteves, 2008).
There have been other studies on the mining sector in emerging economies. Kuijpers, van Huijstee and Wilde-Ramsing (2014) find that the Brazilian minerals and energy sectors are mutually dependent and have overlapping interests and decision-making structures. Shen, Muduli and Barve (2015) find out that an appropriate implementation approach and continuous improvement are the weaker areas of green supply-chain management practice in the case of the Indian mining sector. The study concludes that mining industries need to focus on and make necessary improvements to these areas in order to enhance their green supply chain management performance. Hison (2002) examines both the positive and negative socio-economic impacts of small-scale mining in developing countries, concluding that governments and regional organisations could accomplish much in the way of improved sustainability in the small-scale mining industry by the following means:

(1) Legalizing small-scale mining and implementing sector-specific legislation; (2) contributing to community development and providing increased economic support; and (3) providing training and educational assistance, and playing an expanded role in the dissemination and transfer of important technologies” (p. 3).

Similarly, Govindan, Kannan and Shankar (2014) develop and test a multi-stakeholder model in the Indian mining industry which could increase the likelihood of firms practising value-added corporate social responsibility in industrial environments. Akiwumi (2014) observes that in Sierra Leone local people view the arrival and rights of “strangers” in a different way from the formal rights that the government of the country confers upon those who want to mine in the country. It is therefore critical to understand such fundamentals as it can clearly compromise the ability to build trust and, therefore, to develop and maintain positive peace. Bird (2016) reviews studies on sustainable development in the mining sector with most of them operating in developing countries. The author concludes that most mining firms in developing areas largely benefit those immediately involved, sometimes benefit neighbouring
communities as a result of infrastructural development, and often benefit those in the governing strata. Consequently, the study recommends:

Mining firms to collaborate with diverse regional, provincial and/or national agencies and businesses. Thus these infrastructures - roads, water, electricity, health services, schools and security may be developed to serve larger populations and areas beyond their immediate operating sites. Established mining firms can also foster more inclusive wealth development by establishing more formal, collaborative relationships with artisanal miners (p. 631).

In a qualitative case study, Lauwo, Otusanya and Bakere (2016) examine the reporting practices of the two largest transnational gold-mining companies in Tanzania in order to draw attention to the role played by local government regulations and campaigning by nationally organised non-governmental organisations (NGOs) on the promotion of corporate social reporting practices. The study concludes that there is evidence of social and environmental ills, raising serious doubts about the effectiveness of the regulatory frameworks, as well as the roles played by NGOs and other pressure groups in Tanzania. Similarly, Abdalla and Ak (2015) investigate the pressures to adhere to sustainability practices in an oil company in Sudan and its response to these pressures. Evidence from the study indicates that due to the importance of reputation as an asset to the case company, the forces of change were mainly the foreign partner’s audit pressure and the NGOs’ allegations, which were given high attention.

In Ghana, Yakovleva and Vazquez-Brust (2018) introduce the Salience and Institutional Analysis and Design framework as a means to analyse the strategies of multinational enterprises to deal with the problem of informal miners in the gold mining sector. The paper identifies the emergence of a cooperative strategy between multinationals and informal miners as a sustainable alternative to the political strategy of reliance on the state to protect legal
miners. Hilson (2017) reflects critically on recent actions taken by the Government of Ghana to curb illegal mining using the military and police to combat illegal activity, at times describing its efforts as a ‘fight’ and the phenomenon itself as ‘a menace’. The author perceives the decision of the government to have come as a surprise, “given that ASM [artisanal and small-scale mining] accounts for more than 30% of the country's gold production, and employs close to one million people directly nationwide and generates millions…more jobs in the upstream and downstream industries it spawns” (p. 109).

Essah and Andrews (2016) also identify the discrepancy that exists between practices mining companies consider to be sustainable and the experiences and perceptions of local communities regarding such activities using two large mining companies as an example. The paper suggests that the discrepancy is due to a sustainability focus on land reclamation and other disjointed sustainability programmes instead of a more nuanced framework that places affected communities at the centre of sustainable development.

In summary, several papers in a developing economies context (such as Abdalla & Ak, 2015; Akiwumi, 2014; Essah & Andrews, 2016; Hilson, 2017; Lauwo et al., 2016; Ranangen & Zobel, 2014b; Yakovleva & Vazquez-Brust, 2018) focus on human rights impacts and cultural issues. On the other hand, sustainability concerns that were raised in developed regions with long histories of mining (such as Muduli et al., 2013; Mudd, 2010; Perez & Sanchez (2009); Sheng et al., 2015; Shumate et al., 2017; Weldgiorgis & Franks, 2014) focussed on environmental impacts. In addition, the sustainable development practices of the mining industry have been compared to other environmentally sensitive industries through an analysis of the academic literature (see, e.g., Ranangen & Zobel, 2014b). The authors concede that despite the growth in the academic literature, an in-depth analysis of how sustainability is practiced in these industries is lacking. Ford, Shallcross, Mauss, Floerke and Gruber (2014)
conclude that an understanding of the factors contributing to innovation should go beyond a mere analysis of competitive drivers. Therefore, this study examines sustainable development practices and the role of accounting in sustainable development practices of the mining sector in the context of developing nations.

4.3.4. Sustainability reporting in the mining sector

Driven by requirements of the International Council on Mining and Metals (ICMM) and a global corporate trend, mining companies increasingly publish GRI-based sustainability reports. According to the Global Mining Reporting Survey (KPMG, 2006), 40 out of the world’s 44 major global mining companies produce annual sustainability reports. According to the GRI database, in 2011, 102 mining companies published reports, 95% of which were based on the GRI (2012b) framework. In 2015 and 2016, about 80% and 83% respectively of mining firms prepared sustainability reports (KPMG, 2017, p. 20).

Jenkins and Yakovleva (2006) report that whilst there is evidence of increasing sophistication in the development of social and environmental disclosure in the global mining industry, the maturity of reporting content and styles vary considerably. Guenther et al. (2007) reviewed GRI-style reports of 29 mining firms and discovered that only three elements of the GRI (water use, noncompliance, and direct energy use) are completely reported; indicators of air emissions, spills, indirect energy use for products, greenhouse gas emissions, and the total amount of land use are included in more than 50% of the reviewed reports.

Currently, some subsidiaries of multinational companies in the mining sector are publishing triple bottom line sustainability information on their websites to supplement their annual reports (Murguía & Böhling, 2013; Pellegrino & Lodhia, 2012; Kolk, 2010). Several authors note that mining companies are preparing triple bottom line sustainability reports in order to
show stakeholders what they are doing and to foster good community relations (Jenkins & Yakovleva, 2006; Marimon et al., 2012; Murguía & Böhling, 2013).

4.3.5. Sustainability reporting about Ghana’s mining sector

Similar to the global mining sector, mining companies in Ghana report their activities to the local and international stakeholders using international reporting standards like the GRI (Amoako et al., 2015). This reporting mechanism is to ensure that mining firms present to their stakeholders and the general public evidence of their social and environmental responsibilities such as infrastructure development and measures to take care of water pollution (Fonseca et al., 2014; Pellegrino & Lodhia, 2012). The Ministry of Minerals, Lands and Natural Reserves publishes historical information on production volumes, prices, the value of mineral exports, estimates of investment in the mining sector, production stream values, and royalties (Revenue Watch Institute, 2013). The Central Bank of Ghana also provides data on exports, production volumes and prices but the most comprehensive information on mining revenues is published in Extractive Industry Transparency Initiative reports, which include production volumes, mineral export values, the names of companies operating in the country, production data by company, production stream values, royalties, special taxes, dividends, licence fees, and acreage fees (Revenue Watch Institute, 2013). The Environmental Protection Agency Ghana and the Ghana Chamber of Commerce report on the environmental and social performance of the mining sector covering mining firms’ ability to minimise toxic release and other pollution control measures.

According to the Resource Governance Index, Ghana’s governance of the resource sector ranked 15th out of 58 in the world in 2013, which was the highest ranked African country followed by Zambia and then South Africa. The index measures country governance performance in terms of government accountability, transparency and rule of law. Areas for
attention are Ghana’s reporting practices, as the government does not publish comprehensive
information on key dimensions of the mining industry.

Even though the mining sector in Ghana is claimed to have a long history with a recognised
legal framework, there are a number of challenges hindering the contribution of the sector to
socio-economic progress. The next section takes a critical look at these challenges.

4.4. Profile of Gold Fields Limited and its Damang Mine

As indicated in section 2.3, access was gained to Gold Fields Damang Mine, a subsidiary of
Gold Fields Limited operating in Ghana. This section presents why I chose Gold Fields Limited
for this study, the profile of Gold Fields Limited and the subsidiary that was used as a case
study.

4.4.1. Background of Gold Fields Limited

Gold Fields Limited was incorporated on 3 May 1968, as a gold mining company. A merger
between Gold Fields of South Africa and GenCorp in 1998 led to the formation of Gold Fields
Limited. The company is involved in underground and surface mining of gold and copper with
its related activities including exploration, development, extraction, processing and smelting
(Reuters, 2018). Today, Gold Fields is a leading global gold mining company that has built on
its South African reserves and resources to become a global miner, with eight leading mining
operations across three continents: Australia, Africa (Ghana and South Africa), and South
America (Peru) (see Figures 4.12 and 4.13) with estimated annual gold production of 2.0
million ounces (Gold Fields, 2016). Gold Fields’ work force comprised 9,052 employees and
Gold Fields has estimated Gold reserves of around 46 million ounces and mineral resources of around 102 million ounces. Attributable copper mineral reserves total 532 million pounds and...
mineral resources 5,912 million pounds. Figure 4.14 shows the regional proportions of Gold Fields output in percentages.

**Figure 4.14: Gold Fields’ regional attributable production**

(Source: Gold Fields, 2014)

According to Gold Fields (2016), the company’s vision is to be the global leader in sustainable gold mining. Its values have been categorised into these six:

- **Safety**: If we cannot mine safely, we will not mine
- **Responsibility**: We act responsibly and we care for the environment and all of our stakeholders, including our employees, our communities and our shareholders
- **Honesty**: We act with honesty, fairness, integrity and transparency
- **Respect**: We treat each other with respect, trust and dignity
- **Innovation**: We encourage innovation, entrepreneurship, and acting like owners
- **Delivery**: We work together in teams and do what we say we will do

The overall strategic objective of Gold Fields is to create *Sustainable Cash Flow* to underpin “Shared Value” (Gold Fields, 2016). According to Gold Fields (2016), shared value could be attained as follows:
• To structure our business to generate at least a 15% All in Sustaining Cost (AISC) Free Cash Flow Margin at any gold price.

• It is only if we generate cash on a sustainable basis that we will create sufficient value to meet our commitments to all of our stakeholders, and to grow Gold Fields.

• “Shared Value” is created when both business and social needs are addressed. At its core, “Shared Value” is a business strategy that has a positive social impact without hand-outs.

• To ensure the sustained support of our equity investors, we are committed to paying a dividend of 25% to 35% of normalised earnings.

4.4.2. Profile of Gold Fields Damang gold mine

Gold Fields Damang gold mine is located in the southern part of Western Region of Ghana. It is a 280 kilometre drive by road from Accra and 30 kilometres north of Tarkwa. The Damang concession covers an area of 25,016 hectares and annual rainfall averages 2,030 mm. The Damang Mine is a conventional open pit mine using Gold Fields personnel and equipment. It comprises four open pits with a current capacity of 4.5 million tonnes a year (Barradas, 2016). It is estimated that the current mineral reserve will be depleted in 2024 (Barradas, 2016; GhanaWeb, 2018). Mineral resources as at 31 December 2015 were estimated at 79.61 million tonnes, grading 2.2 grams per tonne of gold (Barradas, 2016). While contractors are responsible for production drilling, blast hole charging, stockpile rehandling and grade control drilling, owner mining activities include all load and haul, blasting, construction and dewatering activities (Barradas, 2016).

Damang has nine host communities, which are home to about 15,000 people. These communities are “Damang, Kyekyewere, Bompieso, Koduakrom, Huni Valley, Amoanda, Nyame-bekyere, Aboso and Subri” (Gold Fields Ghana Foundation, 2012, p. 9). Traditionally,
these communities are part of the Wassa Fiase Traditional Council. Politically, Tarkwa is within the Tarkwa/Nsuaem Metropolis - local authority, while Damang is in the Prestea/Huni-Valley District - local authority (Gold Fields Integrated Report, 2016). See Figure 4.15 for the locations of Gold Fields in Ghana.

Figure 4.15: Locations of Gold Fields in Ghana

(Source: Gold Fields, 2015, p. 5)

Gold Fields Damang Mine was formerly run by Abosso Mine and recorded production was 2.7 million ounces at an average grade of 9.8 grams per ton between 1956 and 1989. In 1989,
Ranger Exploration (Ranger) began an investigation of retreating tailings from the Abosso Mines. Mining went into abeyance from 1956 to 1997. Table 4.10 summarises major subsequent events after Ranger Exploration took over Abosso Mine.

### Table 4.10: History of Gold Fields Damang Mine

<table>
<thead>
<tr>
<th>Date</th>
<th>Summary of event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Open pit operations commenced.</td>
</tr>
<tr>
<td>2001</td>
<td>Ranger sold interest (90% for Gold Fields, 10% for Ghana Government)</td>
</tr>
<tr>
<td>2005</td>
<td>Gold Fields Foundation was established.</td>
</tr>
<tr>
<td>2011</td>
<td>Gold Fields Ghana Limited acquired the indirect 18.9% IAM Gold interest</td>
</tr>
<tr>
<td>2013</td>
<td>Mining activities DPCB ceased May 7. Advance Grade Control started.</td>
</tr>
<tr>
<td>2014</td>
<td>Damang Turnaround Project commenced</td>
</tr>
<tr>
<td>2015</td>
<td>Management decided to shut down Damang Gold Mine due to economic crisis</td>
</tr>
<tr>
<td>2016</td>
<td>Ghana Government intervene with tax reduction</td>
</tr>
</tbody>
</table>

(Source: Brewster, 2015, p. 5)

From 1993 to 1996 a drilling programme and subsequent feasibility study on mining a mineralised quartz vein system to a depth of 200 metres was shown to be viable. Consequently, open pit operations commenced in August 1997 on the main pit, resulting in the relocation of 3,000 people. Gold production started in November 1997 at the 3.0 million tonnes per annum capacity carbon-in-leach plant. The Damang Gold Mine was expanded in 2004 to identify additional sources of ore from areas around the main pit. Following further drilling, a feasibility study was initiated to test the viability of a cut-back to extend the life of the main pit and on approval, the Damang pit cut-back (DPCB) and waste mining commenced in July 2005. In 2006, Mineral Resource estimation was carried out in the newly established pits called Rex, Tomento North, Tomento East, Tomento West and Huni. However, Amoanda Pit was finally
depleted in August 2006. In 2010, drilling and mineral resource estimation was carried out at Amoanda North, Rex, Huni and Juno. Figure 4.16 presents the map of Gold Fields Damang Mine showing mine infrastructure as at 2016.

Figure 4.16: Gold Fields Damang Mine Infrastructure Map
(Source: Gold Fields, 2017)

In 2011, a conceptual extensional resource model was developed for the Greater Damang pit (Huni, Damang, and Main & Juno). This led to portions of the Damang pit down-dip extension drilling programme being completed and incorporated into the Greater Damang Pre-feasibility
Study with a resultant increase in mineral resource and mineral reserve ounces. The mine moved to owner mining and maintenance in 2011 and Gold Fields Ghana acquired the indirect interest of 18.9% IAM Gold (a US based company). Consequently, Damang Gold Mine is now 90% privately owned and 10% held by the Ghanaian government.

The pre-feasibility study captioned “Greater Damang” continued during 2012, following the completion of the Phase 2 drilling campaigns and the Amoanda Project was completed (Brewster, 2015, p. 6).

The gold price fell on the world market in 2013. Due to this, the Damang project was placed on hold, with the operation being restructured to maintain viability during the expected period of low gold prices (Ghana News Agency, 2013). It was reported that things improved in 2014 as a result of the Damang Turnaround Project which yielded a rise by 16% from 153,276 to 177,800 ounces in 2014, while cost of production went down by 25% (Baku, 2015).

Also, in 2015, management of Damang Gold Mine established that the mine was lagging behind its 2015 production targets by 10%. This was due to a combination of factors ranging from current economic challenges, including another slump in gold prices, to lack of funds available from the shareholders. This led to management of Gold Fields Mining Company deciding to close down the Damang Gold Mine. To prevent closure, the Government of Ghana agreed with Gold Fields to reduce the corporate tax rate from 35% to 32.5% and the royalty rate was changed from a flat 5% of revenue to a sliding scale royalty based on the gold price. The terms of the agreement are effective for nine years at Damang Gold Mine and eleven years at Tarkwa Mine (Gold Fields, 2016). It was also announced that Gold Fields is to invest $1.4 billion over an eight year period in its Damang Mine in Ghana, which will extend the life of the mine from 2017 to 2024, during which period Damang will produce 1.56 million ounces of gold (miningmx.com, 2016).
4.4.3. The Gold Fields Foundation

Initially, the Gold Fields Ghana Foundation was established as the Gold Fields Trust Fund in 2002 and registered as a foundation in 2004. The objective of the Foundation is to support the sustainable development of the company’s sixteen primary stakeholder communities. In 2005, Gold Fields Ghana Foundation initiated a five-year community development programme worth US$5 million known as the Sustainable Community Empowerment and Economic Development Program (SEED). An international non-governmental organisation known as Opportunities Industrialization Care International, working in collaboration with government agencies at the local and regional level, and community members were mandated to implement this programme. SEED had four main objectives, namely: increase income and economic opportunities; improve health; improve education and livelihood skills; and make sustainable interventions to foster good relationships between the mine and the Ghanaian community. SEED’s vision was to be “a high impact, result focussed, sustainable and integrated community development program that focusses on economic growth, wealth creation, improvement in quality of life and empowerment through education, capacity building and infrastructural development which can be replicated in mine affected communities all over the world” (Gold Fields, 2005).

All Gold Fields Ghana’s corporate social responsibility initiatives are supported by the Foundation. A functional manager explained that the mining company adopts a formula in arriving at how much to contribute into the community development fund. The Foundation gets its funds from the company by the payment of US$1 for every ounce of gold produced by the operations plus 1% of the Company's pre-tax profits. Various suppliers and contractors of the company also contribute either in cash or kind to the Foundation’s activities.
4.4.4. Critical perspective on Ghana's mining sector and its contribution

Nearly all the large-scale mining companies who have come to Ghana since the 1980s use the open-pit method of mining in addition to cyanide heap leach operations. These methods have huge consequences for both human health and environmental safety (Akabzaa, 2000). The use of heavy machines in exploiting the minerals also has a destructive effect on flora and fauna as it generates more dust (ILO, 2005) and noise pollutants. While mining projects may have a weak developmental impact on the national economy, they can have a definite impact on the communities in which or near to which they are located (Cobbina, Duwiejuah, Quansah, Obiri & Bakobie, 2015). As depicted in Figure 3.1, business activities come with social, environmental and economic benefits, harm and costs. The next sections look at the social, environmental and economic effects of mining activities in Ghana.

4.4.4.1. The Social environment

The impact of mining operations in Ghana both from large and small scale miners is diverse and quite devastating, touching on the livelihood and the very existence of people by affecting large tracts of land need for farming activities acquired by mining companies for large scale surface mining operations and thus depriving mining communities of their source of livelihood (Akabzaa & Darimani, 2001; Amponsah- Tawiah, 2014). Occasional cyanide contamination of water bodies by large scale surface mining operations and mercury contamination from small-scale and illegal mining activities are common. Malaria and upper respiratory tract infection have been cited as the two top causes of outpatient morbidity from 2000-2006 (Amponsah-Tawiah & Dartey-Baah, 2011). There is also a sharp increase in cases of sexually transmitted diseases in the mining areas. Commercial sex workers are mostly attracted to mining communities with the intention of earning higher for their services. Some inhabitants who fail to get other jobs in those mining areas also may end up becoming prostitutes. It is
believed that the growing incidence of HIV cases in the Wassa Amanfi District, which is a mining area in the Western Region is one of the highest in the country (see Table 4.11), and is due to the increasing incidence of the sex trade in the area.

Table 4.11: National HIV prevalence rate compared with Wassa Amanfi District

<table>
<thead>
<tr>
<th>Year</th>
<th>National HIV prevalence rate</th>
<th>Wassa Amanfi District HIV prevalence rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1.7%</td>
<td>6.4%</td>
</tr>
<tr>
<td>2009</td>
<td>1.9%</td>
<td>5.3%</td>
</tr>
<tr>
<td>2010</td>
<td>2.0%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

(Ghana Aids Commission, 2016)

Social vices such as gambling, alcoholism and the use of illicit drugs (Ruddell, Jayasundara, Mayzer & Heitkamp, 2014) such as marijuana and cocaine as stimulants to enable hard work have also taken root particularly amongst illegal and small-scale miners in Ghana. Other social health impacts created by mining activities include hearing loss and silicosis. This is due to the continuous blasting and drilling activities with their resultant noise and dust, which have become a big concern in the mining regions. Large scale surface mining, unlike underground mining in the past, has destroyed vast proportions of farm lands from mining communities including demolition of Ghana’s major export earner, cocoa (Opoku-Ware, 2010). There is a worsening unemployment situation in those communities since the majority of the indigenes are farmers (Amponsah-Tawiah, 2014). With most of the mining activities being capital intensive, less people are employed in the sector, thereby compounding the problem of unemployment in the mining areas of Ghana (Aboagye-Amponsah, 2015; Essah & Andrews, 2016). The operations of mine in these areas have also created other social problems such as overpopulation, congestion, and pressure on basic social amenities. Thus the “gains” from the sector in the form of increased investment and foreign exchange earnings are mainly advantaging Ghana’s local elite and the foreign investors (Horvath, 1972), and are being
achieved at some significant environmental, health and social cost to the people living in mining communities and the nation as a whole (Aboagye-Amponsah, 2015; Amponsah-Tawiah, 2011; Aubynn, 2003).

Community leaders in different parts of the country often argue in support of illegal mining despite its adverse impacts, arguing that the activities have long been the source of livelihood of rural Ghana. This was well before the arrival of today’s large foreign mining companies and surface mineral extraction continues to be a vital economic activity among local operators with deep ancestral ties to mining lands (Bansah, Yalley & Dumakor-Dupey, 2016; Macdonald, Lund, Blanchette & Mccullough, 2014). There are reports of a heavy involvement of traditional leaders and local politicians in illegal mining operations, the mind-sets of many operators toward alternative income-earning activities; the numerous and diverse range of employment opportunities provided by the sector; and the level of investment in operations (Banchirigah, 2008; Hilson et al., 2014). Some of the illegal miners are migrants, especially from China, and these migrant artisanal miners are competing for land with existing large-scale mines over land resulting in disputes between these two groups (Okoh, 2014). Again, many companies hold onto vast concessions granted to them as far back as the 1950s without undertaking any prospecting work on them. This has prevented new investors from having the opportunity to enter the Ghanaian market, just when it is improving (Okoh, 2014).

A Mineral Development Fund has been set up by the Government of Ghana taking 20% in royalty revenues (the remainder goes into a consolidated account). Half of this goes to support the government institutions and agencies which support mining at a national level, such as the Ghana Minerals Commission; the other half is distributed amongst district assemblies (60%), stool lands (20%) and traditional authorities (20%) who have authority over mining activities in their locations (Akabzaa, 2009). There are significant political challenges to the allocation
of this revenue at local level, with receipts used for recurrent expenditure by district assemblies and on private projects by chiefs, rather than on remedial or developmental initiatives for the benefit of the masses (Bloch & Owusu, 2012). This has resulted in mistrust by communities surrounding mining activities, as there have been delays in the release of mining royalties to the mining communities by the Central Government, but the communities have directed their anger at miners (Oxford Business Group, 2014). As indicated earlier, the mining industry is largely owned by foreign multinationals and this has created the impression that foreign companies are in Ghana to exploit the country (Oxford Business Group, 2014).

4.4.4.2. Ecological environment

The International Monetary Fund, the International Development Agency and the Government of Ghana’s collaboration to reform the mining industry of Ghana have not received corresponding reforms in other sectors, such as the environment and health care sectors, to accommodate the potential impacts arising from the accelerated growth in the mining industry (Amponsah-Tawiah, 2015). This situation has resulted in a negative effect not only on mining communities but the economy at large. An attempt to quantify annual losses to the economy through environmental degradation by the Environmental Protection Council in 1988 put conservative estimates at GH₵ 41.7 billion, or 4% of total GDP. Even though the annual cost of mining activities is not clear, evidence of environmental pollution in river bodies clearly indicate dangers for the health of communities around mines. For instance, in Prestea, a mining city in Ghana, there were high levels of arsenic and antimony concentrations in the rivers (from 0.90 – 8.25 ppm and 0.09 – 0.75 ppm respectively), far exceeding the World Health Organisations recommended values of 0.01 and 0.005 ppm respectively (Serfor-Armah, Nyarko, Dampare, Adomako, 2006).
The environmental and social impacts of illegal artisanal mining in sub-Saharan Africa are well documented (Hilson, 2017; Kitula, 2006; Olujimi et al., 2015; Wilson, Renne, Roncoli, Agyei-Baffour, & Tenkorang, 2015). In Ghana in particular, the industry has experienced unprecedented and chaotic growth for the past two decades, bringing about many problems that the authorities have struggled to address (Amankwah & Anim-Sackey, 2003; Hilson et al., 2014; Hilson, 2017). Thus, while the economic benefits from the industry appear enormous so are the problems that emanate from mining operations. The principal elements of the environment (i.e., land, water and air) have been severely affected by mining activities in Ghana. Mining firms in Ghana are claimed to release toxic chemicals such as arsenic, cyanide, cadmium, lead and mercury, and these affect the water, the soil and the food crops grown in mining communities (Amponsah-Tawiah, 2011; Cobbina et al., 2013). Figure 4.10 shows a water body in Ghana polluted by mining activities.

Figure 4.10: A water body in Ghana polluted by mining activities
(Source: Citifmonline.com, 2016)
Currently, statistics from the Ghana Revenue Authority indicate that the minerals and mining sector continues to be a leading source of fiscal revenue for the country as its contribution towards Ghana’s economic development keep rising (see Figure 4.11).

![Figure 4.11: Commodities in Merchandise Exports (2015)](source: Bank of Ghana, 2016)

Currently, Ghana’s mining sector’s corporate tax is 35% compared to the average corporate tax rate of 25%. The mining sector’s contribution in direct taxes to Ghana in 2015 was GH₵ 1.35 billion. Even though that figure represents an 8% increase on the GH₵ 1.24 billion recorded in 2014, the mining industry’s share in total direct taxes to Ghana’s economy reduced from 16.2% in 2014 to 14.8% in 2015 in terms of mineral royalties, pay as you earn (PAYE) and other taxes. The sector’s fiscal payments comprised GH₵ 463.12 million in corporate taxes, GH₵ 485.6 million in royalties, GH₵ 404.74 million in PAYE and GH₵ 0.87 million in other taxes. In 2013, 86.6% of export revenues from the mining sector came from gold, making the gold the top export and source of foreign currency: gold generated $4.2bn in 2013, compared with $3.2bn from oil and $1.3bn from cocoa (Oxford Business Group, 2017).
According to the Bank of Ghana, the mining sector was the leading source of foreign exchange in 2015, contributing in excess of 31% of total merchandise exports. The inflows from the mining sector made a large contribution to the relative stability of the local currency in 2015, with producing member companies of the Chamber of Mines returning 85% of their realised mineral revenue into the country, US$2.6 billion through the commercial banks and the US$0.50 billion via the Central Bank. The companies spent 28% of their mineral revenue on local purchases of consumables, which represents a nominal value of US$865 million. Similarly, US$166 million was used in importing consumables to support the production process. Expenditure on local purchases increased from 18% of mineral revenue in 2011 to 28% in 2015 while expenditure on imported consumables declined to 5% from 15% over the same period. The Ghana Living Standards Survey conducted between 2005 and 2006 indicated that mining’s share of total employment in Ghana was about 0.7% (Ghana Statistical Service, 2008b). According to the 2010 census, the mining and quarrying sectors altogether employ 1.1% of the workforce (Ghana Statistical Service, 2013). As well as paying taxes and providing employment opportunities, mining companies also make direct contributions to the communities that host their operations.

In 2002, the Ghana Mineral Commission mandated all mining companies to adopt the concept of corporate social responsibility to assist their host communities (Temeng & Abew, 2009). Consequently, all producing mining companies in Ghana have set up departments and units to deal with corporate social responsibility, which tie mining production and revenue to funds for corporate social responsibility (Bloch & Owusu, 2012). For instance, Gold Fields Ghana Limited’s Sustainable Community Empowerment and Economic Development (SEED) programme, Golden Star Development Foundation (GSDF), and Newmont’s Ahafo and Akyem Foundations have been set up for community development by some of the leading mining firms in Ghana. These social investments are diverse and support a range of
developmental areas such as education, health, alternative livelihood assistance and other infrastructural needs of host communities (Edwards et al, 2014; Measham & Fleming, 2013). The expenditures are intended to complement the government’s efforts to develop the mining communities (Essah & Andrews, 2016). However, several studies have shown otherwise (Edwards, Sloan, Weng, Dirks, Sayer & Laurance, 2014; Measham & Fleming, 2013). For instance, Awudi (2002) claims:

Despite these positive indicators, the role of the mining industry in the economic development of Ghana is suspect. Despite the over US$2 billion Foreign Direct Investment (FDI) in mineral exploration and mine development during the last decade indicating over 56% of total FDI flows to the country (with the attendant increase in mineral exports) the sector is yet to make any meaningful impact on the country’s overall economy (p. 1).

Having looked at Ghana’s mining sector and its contribution to socio-economic development, as well as its challenges, the next section presents an overview of Gold Fields and its Damang Mine and justifies why Gold Fields was chosen for this study.

4.5. Chapter summary

This chapter has described and analysed the context for this study and it shows the impact of global mining sector and, in particular, Ghana’s mining industry and how it has shaped the country’s historical, economic, social and ecological environment. For the 1,000 years up to the end of British colonisation, Ghana has been linked to the West African and intercontinental gold trade (hence the colonial name for the country: The Gold Coast). After a fall in production immediately after independence in 1957, Ghana has come to rely on the mining sector economically. However, the sector is largely foreign-owned by a few large companies from
Canada, Australia, South Africa and the US. Aside from these multinationals, there are local artisans and small-scale miners who are employed by the mining sector.

In the mining sector globally, there has been sporadic growth of interest in sustainability which is mainly due to stakeholder pressure. Hence mining companies in collaboration with stakeholders have developed policies and standards to promote sustainable development in the sector. Similarly, even though there are claims of an economic contribution from Ghana’s mining sector, these economic gains have been at the expense of the environment and social wellbeing. Mining firms in Ghana engage in sustainability reporting on their social and environmental activities in the name of sustainability. However, stakeholders, especially communities near the mines and regulators are claimed to be unsatisfied with these sustainability initiatives. Furthermore, in the last two decades, several established regulatory bodies, including government ministries and agencies, monitor the activities of the mining sector. Thus, local regulatory bodies such as the Ministry of Minerals, Lands and Natural Reserves and international bodies such as GRI, the ICMM, and the UNDSD (Fonseca et al., 2014; Onn & Woodley, 2014) monitor and encourage the mining firms to report on their activities. Even though these institutions exist, there is weak policy and legal/regulatory frameworks resulting in several social, economic and ecological challenges to the country in spite of the economic benefits derived from the mining sector (Aryee, 2001).

This chapter further presented the profile of Gold Fields Limited as the case study. It was learnt that Gold Fields is a leading South African mining multinational company with operations in Australia, South Africa, Ghana and Peru. Gold Fields is reported to have a good reputation for sustainability, as it is part of the Dow Jones Sustainability Index and has high ratings in sustainability reporting by the GRI.
In Ghana, Gold Fields Limited is the second largest mining company, with two subsidiaries, namely, Takwa and Damang. The Damang Mine which was chosen for this study has ten communities in which Gold Fields carry out various sustainable development projects through the Gold Fields Foundation. Given that there are several stakeholders in the mining sector, with some of them periodically requiring accountability, it seems prudent to investigate the sustainable development initiatives and reporting practices of these mining companies. This leads to the next chapter which discusses sustainable development practices and the perceived role of accounting in the case mining company.
Chapter 5: Analysis of Gold Fields stakeholders, their perceptions of sustainability and motivations for sustainable development practices

5.1. Introduction

In chapter 1, I explained that the research sets out to investigate sustainable development practices and how accounting contributes to efforts to achieve sustainability. I have also provided information about the mining sector and its activities in Ghana, Gold Fields Limited and its Damang Mine, and how I carried out the fieldwork there and why in chapters 2 and 4. I established my conceptual framework (see Figure 3.1) and related how stakeholders were central to my investigation in Chapter 3. The materials in this chapter are derived from my inquiries at Gold Fields Damang Mine, by using the research method that is explained in Chapter 2. In this chapter, the research framework developed from the literature review and semi-structured interviews are examined using thematic analysis and findings are presented.

In this chapter, I present my analysis by identifying the stakeholders of Ghana’s Mining sector (see section 5.2), and how sustainability is understood by these stakeholders (see section 5.3). In section 5.4, I examine sustainable development practices at Gold Fields Damang Mine and in Section 5.5, I present reasons for Gold Fields having initiated these sustainable development practices. Finally section 5.6 gives a summary of the chapter.

5.2. Stakeholders of Gold Fields Damang Mine

Given that the purpose of this study was to examine the opinions of stakeholders in Ghana’s mining sector on sustainable development and the role of accounting, the researcher had to identify the stakeholders. This was done initially among managers and employees of the case mining company. Then using personal contacts and acquaintances, the researcher was able to access other external stakeholders he identified from what managers and employees told him
and from what those other stakeholders disclosed to him. In other words, stakeholders were identified using a snowball approach (Teng & Faff, 2017), as well as applying knowledge from the literature. The results of this method are elaborated on in this section.

When asked who stakeholders were in Ghana’s mining sector, functional managers responded as follows:

Identifying our stakeholders has always been quite tricky, because any individual or group of people could be known as a stakeholders, once they show concerns on our activities. This notwithstanding, I can mention some obvious ones like employees, communities close to the mining company, shareholders, the Government of Ghana, and even our corporate office in South Africa. (Middle Manager 3)

We have different stakeholders ranging from professional associations like the Ghana Chamber of Mines, international bodies like the ISO, the GRI and the ICMM. Besides these stakeholder[s], I can also think of the 10 communities in our catchment areas, investors, and government institutions like the Forestry Commission, Minerals Commission and the Environmental Protection Agency. (Middle Manager 1)

A lower level manager also elaborated:

Our stakeholder[s] include the media, communities and even you as a researcher is stakeholder. There have been several occasions that we collaborate with the University of Mines, Takwa on student attachment programmes. As I speak to you now a sustainable development model that all mining firms in Ghana are using was designed by a professor from the University of Mines. (Lower Manager 3)

It can be seen from the above responses that the definition of stakeholders is not restricted to a few individuals or groups of people; it might even be said to be unlimited. This resonates with claims by Mitchell et al. (1997) and Cragg and Greenbaum (2002) that the definition of a stakeholder must be based on the understandings of the people asking this question, and, for managers of an organisation, is a function of innumerable day to day managerial activities and who and what they affect (Cragg & Greenbaum, 2002).

Given this abundance, there is a need to provide order, and a common method for doing so is to categorise stakeholders into two types, namely internal (i.e., those who are involved in an organisation, for example its owners, managers and employees) and external (i.e., those who
are not internal) (e.g., Harrison et al., 2010; Jurgens et al., 2016; Laplume et al., 2008). Thus, based on interviewee responses, stakeholders at Gold Fields were categorised as internal and external stakeholders in line with these other studies.

Whilst internal stakeholders are management and non-managerial employees (including contractors), external stakeholders include the parent corporation, shareholders and investors, suppliers, customers, creditors, the Ghanaian government, the media, industry associations, advocate groups, Ghanaian citizens as well as international and local regulatory bodies. The regional and parent companies could also be considered as both internal to Gold Fields Limited but external to Gold Fields Damang Mine.

However, according to some interviewees, there are additional possibilities. For example, an interviewee, narrating the broad nature of who a stakeholder in the mining sector could be, explained his opinion with reference to a recent event:

*The issue of stakeholder is broader than one can think of ... do you know that even NGOs in Ghana have a Coalition of Non-Governmental Organisations Against Mining...people thought that mining in the Atiwa Forest Reserve by the Chinese was detrimental to the environment, even though the Government had agreed on a $15 million contract. This Coalition of Non-Governmental Organisations Against Mining decided to petition the International Union for Conservation of Nature. This portrays the unpredictable nature of who a stakeholder could be.* (Middle Manager 4)

Thus, one should appreciate that among stakeholders, particularly external stakeholders, there may be some who are critical and hostile towards the organisation because of what it stands for and what it is doing, including societally and environmentally. Similarly, economic or business competitors are another category of stakeholder wanting an organisation to underperform (Awwal, 2014; Harrison et al., 2010; Markman et al., 2016). However, managers and employees of Gold Fields did not consider competitors when defining who a stakeholder is.

Prompted by the perceived differences in stakeholders, I also distinguished between stakeholders resident in Ghana and otherwise. This split of stakeholders was deemed necessary
as some stakeholders, particular those outside Ghana, could have limited knowledge of what goes on at the plant site and the effects of mining operations in Ghana. Furthermore, even if such stakeholders are aware, they may not care much about what is happening (Kostova et al., 2008; Meyer et al., 2018), compared to those in Ghana who may be experiencing the impact of mining operations. The various stakeholders of Damang Mine are depicted in Figure 5.1.

Figure 5.1: Stakeholders of Gold Fields Damang Mine
(Source: Author’s construct)

The above findings are in line with one core argument of stakeholder theory: that various stakeholder groups could have conflicts of interest (Freeman & Reed, 1983). There is evidence that some stakeholders or individuals recognise themselves as less powerful and influential. In
such situations, the weak stakeholders may come together to form a stronger stakeholder group when struggling with a more powerful stakeholder in pursuit of a common interest. Extant studies claim that such conflicts of interest in a company could be tensions between insiders and outsiders (Bøhren et al., 2012), as a firm’s resources are controlled by the insiders, who might make self-serving decisions at the outsiders’ expense (Bøhren et al., 2012; Jensen & Meckling, 1976; La Porta et al., 1997). Contrary to this assertion, evidence in this study indicates that individuals could be part of both internal and external stakeholder groups (Öberseder et al., 2013). For example, some management and non-managerial employees of Gold Fields are residents and indigenes of communities near the mine. This could imply that in situations of stakeholder conflicts, some stakeholders who belong to both sides (internal and external) may have to choose which side to defend and are most likely to stay with organisational expectations if external stakeholder pressure is not stronger (Meyer et al., 2018; Westney, 1993).

5.3. Stakeholders’ epistemological interpretations of “sustainability”

Opinions on what sustainability means were sought from the interviewees. Although a few interviewees defined sustainability with reference to the widely recognised WCED (1987) broad definition: “Development that meets the needs of the present without compromising the ability of future generations to meet their needs” (p. 8), most interviewees gave disjointed views on what sustainability means with most of them covering just one dimension, some combining more than one of the dimensions, but some professing to having no idea of what sustainability is about.

I attempted to make more sense of the data by grouping the interviewees according to the stakeholder types enumerated above (i.e., managers, employees, regulators, community residents and an academic). Thus, I was able to analyse the perceptions of sustainability by
In Chapter 3, I established in my conceptual framework that sustainability has three dimensions (see Figure 3.1). Similarly, my analysis of the responses from interviewees led me to an initial conclusion that sustainability at Gold Fields covers three main dimensions, namely, economic, social, and environmental. Working from this initial conclusion, I did a further analysis by breaking down these three broad dimensions. The further analysis resulted in the 15 sub-dimensions shown across the columns comprising Table 5.1. I completed Table 5.1 from this analysis by combining the opinions of the stakeholder types shown in each row and using ticks (✓) to indicate whether at least one interviewee of a particular stakeholder type made any reference during the interview to the dimensions represented by the column. Findings on the analysis follows next.

Nearly all interviewees, across all stakeholder groups, with the exception of some community members, responded that they had ideas on sustainability. Areas identified in relation to sustainable development from the interviews include political, legal, culture, health and safety, education, demographic. Surprisingly food, nutrition and spiritual matters of communities nearby as well as security of the mining firm were also part of the identified dimensions of sustainability (see Table 5.1). Nevertheless, the identified sustainability dimensions could still be grouped under the three categories of the triple bottom line.
### Table 5.1: Dimensions of Gold Field’s sustainable development practices

<table>
<thead>
<tr>
<th>Stakeholder categories</th>
<th>Sustainable development dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social</td>
<td>Environmental</td>
</tr>
<tr>
<td></td>
<td>Corporate</td>
<td>Societal</td>
</tr>
<tr>
<td></td>
<td>Health &amp; safety</td>
<td>Security</td>
</tr>
<tr>
<td>I Middle Managers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Lower level managers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III Non managerial</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Employees (n=5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Community residents</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V Regulators</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI Academic</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII Police Officers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(n=2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIII Researcher’s</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>observation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Regarding particular rows of Table 5.1, functional managers (Row I), often referred to as middle level managers, mostly explained sustainability with an emphasis on the economic interests of the business and some social dimensions:

*Everything that we have to do to secure the mine, to prevent an abrupt shut down of the mine, is what I understand as sustainability.* (Middle Manager 4)

A functional manager who has an accounting background although is not a practising accountant indicated:

*Sustainability involves all the activities that ensure that the business continues to exist. Similar to going concern in accounting, we as managers are here to ensure the survival of this company even if we leave it for other people to take over.* (Middle Manager 1)

A functional manager indicated:

*All environmental, social and financial and even safety dimensions come into sustainability. … At Gold Fields a lot of issues comes in on sustainability. Even matters on security is very important to the sustainability of the mine. As you can see, we have a police station on-site beside the Protection Services Department. We subscribe to the GRI and we cover all these areas.* (Middle Manager 3)

As indicated in chapter 3, Schaltegger and Wagner (2009) claim that there is a link between the Balanced Scorecard and sustainability. Figure 5.2 presents the balanced scorecard of Gold Fields Limited. A functional manager connected sustainability to the balanced scorecard of Gold Fields:

*If we are talking of sustainability we have this as our BSC for the year; the people, business optimization, social licence to operate and financial. These are the four areas that our BSC operates.* (Middle Manager 1)
Even though a manager related sustainability to the balanced scorecard, there is a difference between the two. As can be seen in Figure 5.2, unlike the triple bottom line dimensions, the balanced scorecard does not explicitly consider environmental concerns. Rather, it categorises the economic and social issues as financial, people, business optimisation and social licence to operate. Kerr et al. (2015) claim that “while frameworks such as the balanced scorecard (BSC) can facilitate implementation of sustainability reporting, some organisations may choose to fully integrate the latter into their management control system” (p. 189). Even though Gold Fields appears to have integrated the balance scorecard into their operations, unlike the sustainability balance scorecard presented in section 4.5, the balanced scorecard of Gold Fields in Figure 5.2 is more concerned with managerial control of profit, not
sustainability. This indicates the dominance of economic and social sustainability at the expense of ecological sacrifices (Gray & Bebbington, 2001).

Lower level managers (Row II in Fig. 5.1) also had various views but collectively explained sustainability. Unlike middle managers, who focussed mainly on the economic aspects, lower managers focussed mainly on social and environmental sustainable development practices of the mining company:

*At Gold Fields sustainability means operating in a way such that we prevent environmental pollution and reduction in waste generation. Sustainability also involves community works like schools and infrastructural projects. (Lower Manager 5)*

Two lower level managers also explained sustainability by focussing on the social aspects:

*We don’t finish all the resources for them to come and blame us that our forefathers never thought of us. (Lower Manager 3)*

*You should not starve yourself, but at the same time have tomorrow in mind in everything that you do. (Lower Manager 2)*

Another lower level manager commented:

*On sustainability at Gold Fields, at the operations level we have different units with managers focussing on community and public relations, environment, security and health and safety. (Lower Manager 4)*

A lower manager who tried to explain the economic dimensions ended up by stating a socio-economic impact that the mining company has on communities:

*On the economic side, it has to do with how to improve the livelihood or economic activities of communities in our catchment areas. (Lower Manager 2)*

Giving a new insight into sustainability, Lower Manager 3 further explained sustainability with emphasis on the spirituality of communities:

*We do so many things when it comes to sustainable development. We build schools, hospitals, community centres and even at time churches when relocating people. ...Any time we want to tamper with a river body, we liaise with the traditional rulers to perform some rituals before diverting the river as the people believe our rivers are gods. There was a time the mining crew came across a deserted cemetery - we had to perform some rituals before mining activities was carried [out]. (Lower Manager 3)*
The opinion of Lower Manager 3 indicates that sustainable development especially on ecology, could affect the spiritual lives of the indigenes. Even though some authors (such as Carroll, 2012; Núñez Madrazo, 2011) connect sustainability to spirituality theoretically, this study is among the first to empirically discover how the operations of companies, particularly the mining sector, could affect the spiritual lives of communities. Similar to previous studies (e.g., Dubiński, 2013; Gilberthorpe & Hilson, 2016; Vintró et al., 2014), there is a relationship between the sustainable development dimensions and the need to ensure equilibrium, as issues affecting environmental aspects could have implications for the economic and social dimensions and vice versa.

Employees (Row III) also shared their views on what sustainability is about. A cost accountant’s opinion of sustainability was towards the social and environmental dimensions:

When we talk of sustainability, we are actually looking at our future generations as we explore our natural resources. At Gold Fields, we make sure that we rehabilitate our mining areas as well as other social activities. We have scholarship schemes and other community development projects in place for the communities in our mining areas.

(Non-managerial employee 2)

Another employee elaborated:

Gold Fields also take care of the environment, the community and wellbeing of its employees in general. When it comes to some social activities, Gold Fields pay taxes...making sure that we are in line with some other policies that bind the modern society.

(Non-managerial employee 3)

One of the employees, gave a broader definition of what sustainability is:

Sustainability is about measures put in place to help something to stay longer. By doing so, it will also take care of the environment as well as the community and employee welfare in general. ... We even have a youth-in-agriculture programme towards sustainable food supply by contributing in rehabilitating the disturbed lands and planting crops like cassava and oil palm plantations.

(Non-managerial employee 6)
However, a few employees had difficulty in explaining sustainability. For instance, an employee from the Health and Safety Unit, which is core to sustainable development, could not explain the term sustainability:

*I've heard of the term but I actually don't understand it. (Non-managerial employee 1)*

Similarly, the term sustainability was new to some community members (Row IV). For instance, after pondering on what sustainability meant for few seconds, a resident replied:

*My brother, I have not heard of this term before (Community Resident 1).*

Another resident also explained,

*I know what corporate social responsibility is, but actually don’t know what sustainability is. But I heard of the term when the government signed an agreement with management of Gold Fields to reduce taxes and royalty payments so that the Damang Mine will not collapse. (Community Resident 3)*

The above quotation from Community Resident 3 and Non-managerial Employee 1 resonate with an observation by Solow (1992) that sustainability to some people could be just a term but may not mean anything specific and that people who are new to the term may not be interested in finding out what it means.

Regulators (Row V) also had different opinions of what sustainability is about. Like employees, responses from senior members of the Environmental Protection Agency Ghana indicated that they are very concerned with the environmental and social dimensions of the mining sector. Officials elaborated:

*When you plant cassava, harvesting it is different from harvesting fruits or a plantain. Cassava disturbs the ground but you shouldn’t say that it’s a destructive activity, rather, that is how it can be acquired. But how do you remedy the disturbance that it has caused? Mining will disturb the environment. But the measures that are put in place to address them are the critical issues to focus on when it comes to sustainable mining. (Regulator 2)*

*Sustainable development means meeting the needs of current generations without compromising the future. You know there is this formula I=PAT, where P is population, A is affluence and T is technology. All of these elements can’t be controlled except technology ... Mining companies should use their technologies in such a way that the*
consequences of their activities on the environment become minimal and even then, it is incumbent upon them to remedy the situation. (Regulator 1)

Explaining further, the officials of the Environmental Protection Agency Ghana commented as follows:

Basically all dimensions of the sector are regulated because the environmental permit covers both the bio-physical environmental as well as the social environment. Biophysically we are looking at the water, air pollution, the vegetation cover and then your impact on communities’ livelihood. (Regulator 2)

It’s not the environmental dimension alone that we look at as regulators; if a company’s activities are impacting on a community, we encourage companies to make sure their living standards are improved. (Regulator 1)

Regulators explained sustainability with emphasis on how to mitigate consequences of mining operations using technology. This assertion contradicts Kuhlman and Farrington (2010) who doubt whether technology will always be able to solve sustainable development challenges.

An academic (Row VI) at the University of Mines, Takwa Ghana had a similar opinion to that of the regulators:

Sustainability has several meanings, but in business terms, it’s about a more humane, ethical, and transparent way of doing business so that effects of business activities on the bio-physical environment will be minimal. (Academic)

In relation to the mining sector, the interviewee further explained:

Mining activities should be done in a way that the repercussions on the environment are controlled. (Academic)

The above quotations from stakeholders show that there are different perceptions of the concept of sustainability, hence the number of dimensions in Table 5.1. Individual stakeholders varied in whether they relate sustainability to all three dimensions (social, economic, and environmental), two-dimensions or only one of them (social/economic/environmental) (Montiel & Delgado-Ceballos, 2014). However, when responses were grouped by stakeholder types, some patterns in Table 5.1 emerged.
Interpreting the above opinions on dimensions that Gold Fields’ sustainable development practices cover, all (lower managers, employees, regulators and the academic) except middle managers ignored the economic dimension of sustainable development. Even though these stakeholder groups claimed that the mining company looks at all dimensions, interpreting the responses provided regarding sustainability shows that they may not be so interested in the economic dimensions of sustainability. These responses from lower level management, employees, regulators and the academic may be because they may not be held accountable for the overall economic performance of sustainability; hence less attention is given to the economic dimensions by these stakeholders. It could also be that traditional sustainable development practices have focussed on the social and environmental dimensions (Sharma & Henriques, 2005).

Interviewees defined sustainability with reference to the widely recognised WCED’s broad definition which integrates social, environmental and economic issues. However, with the exception of middle managers, their opinions on the dimensions were disjointed and skewed away from economic sustainability which could indicate how the broad definition of the WCED appears challenging for organisations to operationalise. Thus, the WCED definition provides limited guidance regarding how they should identify and integrate present versus future needs, as well as determine the technologies and resources to meet those needs (Gimenez et al., 2012). Considering the various opinions of stakeholders, it can be inferred that organisations find it challenging to comprehend how effectively they can balance corporate responsibilities between diverse stakeholders (Hart, 1995; Starik & Rands, 1995).

Extant studies have assumed that different organisational culture types influence how employees understand and enact corporate sustainability (such as Linnenluecke & Griffiths, 2010). This study establishes that even within the same organisation and stakeholder groups,
including people controlling the organisation, there are variations in how sustainability is perceived and that various stakeholders in the same industry have different perceptions about what sustainability is all about. This is in line with findings in the extant literature that sustainability lacks a widely accepted operational definition and framework (Bell & Morse, 1999; Holden et al., 2017; Solow, 1992) and that sustainability has been used in various contexts to mean different things to different people as the term keeps being “moulded” (Bebbington, 2001, p. 128).

Thus, such variations in perceptions are likely to affect what dimensions of sustainability are reported. This may be why extant studies have argued that a general widely accepted definition of sustainable development is necessary for interested parties, such as academics, managers and policy makers, in order to establish a mutual language and understanding for such a crucial and commonly used concept (Nikolaou & Evangelinos, 2008). Kuhlman and Farrington (2010) argues that a common definition of sustainability at the industrial level could be a possible beginning to resolve the perennial tensions between economists and ecologists about sustainable development Nevertheless, Fonseca (2010) posits that:

This argument is somewhat naive in its search for consensus over the meaning of an evolving construct that spans several ethical imperatives across several social groups. Some degree of variation in the meaning of Sustainable development is not only acceptable, but inevitable (p. 57).

This study reinforces the claim that sustainability is multifaceted and that, similar to extant studies, the perception of sustainability by the stakeholder groups interviewed appears to be in line with their areas of interest (Fiedler & Kirchgeorg, 2007; Hillenbrand & Money, 2007). Whilst managers of the mining firm focussed on economic aspects of the triple bottom line, regulators, employees, community members, and an academic emphasised social and
environmental concerns. The responses from the latter groups were not surprising as traditionally sustainability has focussed on the social and environmental aspects. Furthermore, regulators, employees and lower level managers may not be held accountable for financial aspects of sustainability; hence less attention is given to the economic aspects by them.

The diversity of perceptions found in this study is reflective of stakeholders realising a growing need to engage with sustainability, but with quite a disjointed point of reference in terms of issues to be managed (AccountAbility, 2015, Kaur & Lodhia, 2018). Another implication of this diversity of perceptions about the role and involvement of accounting is that, if I were to assume a single static perception about sustainability exists for everyone, I would be ignoring the multiple realities constructed and perceived (Bryman & Bell, 2007; Creswell & Clark, 2007, 2017) by the various stakeholder groups. The diversity of stakeholders' perceptions may be problematic and add challenges to the process of working through issues. Nevertheless, it could also create a tension that drives the organisation and society at large to greater levels of sustainability (Hahn et al., 2015).

Having looked at how stakeholders of Gold Fields Damang Mine perceive sustainability, the rest of this chapter examines sustainable development practices and motivations.

5.4. Sustainable development practices of Gold Fields Damang Mine

This section presents findings on practices associated with sustainable development by Gold Fields Damang Mine. During data collection, managers, employees, regulators and an academic were asked what areas Gold Fields looks at in terms of sustainability. The interpretation of empirical data shows that respondents had ideas of how the mine goes about their sustainable development practices. Stakeholders indicated that sustainability at Gold Fields covers the social, environmental and economic dimensions shown in Tables 5.1 and 5.2.
Section 5.4.1 present the contributions of various departments at Gold Fields Damang Mine towards sustainable development practices of the mining company. This is followed by Section 5.4.2 which details how the mining company practises sustainability and its sustainability policies. Section 5.4.3 outlines sustainability standards of Gold Fields.

5.4.1. Departments at Gold Fields Damang Mine and their sustainability focus

At the operations level, there are ten departments at Gold Fields Damang Mine: metallurgical, engineering, mining, mineral resources, human resources, community affairs, safety health environment, heavy mining equipment, protection services and finance. Each of these departments contributes to at least one dimension of sustainability.

Using the three dimensions and 15 sub-dimensions shown in Table 5.1, I completed Table 5.2 from this analysis by combining the functions of each department shown in each row and using ticks (✓) or empty cells to indicate whether that function of the department was referred to during an interview with a middle manager (see Table 5.2). If a dimension was referred to by Manager 1, the corresponding cells in the row of the department were ticked. On the other hand, if a dimension was not referred to in the interview, cells in the row corresponding to that department were left blank.

As can be seen in Table 5.2, six of the departments contribute to economic dimensions of sustainability (Engineering, Mining, Mineral Resources, Finance, Metallurgical, and Heavy Mining Equipment). Two departments, namely, Protection Services and Human Resources, contribute to social as well as economic dimensions. The Safety Health Environment department focusses on both social and environment dimensions. The Safety Health Environment department was two separate departments until 2014; now it is one department with a manager, but it has two superintendents (Safety & Health, and Environmental). Each
superintendent sees to the implementation of the sustainable development programmes and policies at their department.

The pattern of ticks in Table 5.2 shows that departments responsible for economic dimensions of sustainability predominate and that they seemed concerned only with said economic dimensions. The only two departments focussing on both social and environmental aspects appear to pay more attention to social dimensions of the daily operations of the mining company. Only one department, Safety Health Environment, performs environmental responsibilities, even though their duties cut across all sectors of the organisation.

As shown in Table 5.2, the Community Affairs Department’s function cuts across all sustainability dimensions at Gold Fields and there seem to be crossovers in the functions of some other departments. For instance, the Community Affairs Department and the Environmental Unit do have common interests in issues relating to the environment of communities close to the mine. Such situations may call for collaboration between departments. This shows that there is a nexus between the sustainability dimensions and that departments are required to collaborate in some areas in executing sustainable development agendas (Murray et al., 2010).
## Table 5.2: Departments, basic functions and contributions towards sustainability

<table>
<thead>
<tr>
<th>Department</th>
<th>Function</th>
<th>Sustainable development dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Environmental</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corporate</td>
<td>Societal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health &amp; safety</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infrastructure</td>
<td>Demo-graphic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Political &amp; legal</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nutrition</td>
<td>Recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Land</td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shareholder wealth</td>
<td>Income levels</td>
</tr>
<tr>
<td>Engineering</td>
<td>Oversight operational performance</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mining</td>
<td>Plan future production, examine quality, oversee development</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Mineral Resources</td>
<td>Manage ore reserves and resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td>Prepare, monitor, review financial and activity reports, and forecasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metallurgical</td>
<td>Extract and process various ores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Mining Equipment</td>
<td>Manage company’s fleet and equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Services</td>
<td>Maintain a safe and secure environment and prevent unauthorised entry</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Manage human resource policies and standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Health Environment</td>
<td>Ensure compliance with regulations</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Community Affairs</td>
<td>Community engagement and social development</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Even though these departments are interrelated in ensuring sustainability, there seems to be no balance among the aspects. For instance, six departments solely and one partly focus on economic sustainability, three departments could be linked to the social aspects, and only one department has environmental responsibilities (see Table 5.2). Responses from managers also indicated that economic activities are given more attention than social and environmental sustainability. The above is consistent with other studies that conclude that in mining firms whose sustainability reporting covers the triple bottom line, economic interests dominate (Cisneros & Christel, 2014; Falck & Spangenberg, 2014).

The rest of this section elaborates in detail with examples of how Gold Fields go about their sustainable development practices in regard to the dimensions in Tables 5.1 and 5.2. These are grouped by the triple bottom line elements: social, environmental and economic dimensions.

5.4.1.1. Social Dimensions of sustainability

As outlined above, Gold Fields Damang Mine has ten departments and each contributes towards at least one dimension of sustainability. Out of these departments, the Community Affairs department is most involved with social matters. Nevertheless, the property protection department and the health & safety unit (which is part of the safety health environment department) also contribute towards social sustainable development practices of the mining firm (see Table 5.2). The functions of these departments are explained in detail in the following sections.

The protection services department

Maintaining a safe and secure environment for employees and visitors, formulating and implementing security policies and procedures as well as preventing unauthorised entry into the premises of the mining company is shouldered by the property and protections manager.
That department manages all security technologies and services, including protection services, perimeter defences, physical access control, and profile management of all employees, contractors and visitors.

The researcher was keen to know how crime affects the mining firm, as managers and employees were very concerned about security when discussing sustainability. There were mixed views on the issue of crime:

...if we are talking of things like thefts, burglary and other vices, I wouldn’t say it is that prevalent in this area. Once in a while, yes, if security is down, you will get people coming in to steal or people trying to intrude in our operational areas. Other than that I don’t think the crime rate here is high. (Middle Manager 1)

The crime level is very low here because there is a police station at the mining site and one in the next village. I can say that a major factor that contributes to crime is unemployment. As you can see, there are jobs here. But if you don’t have a job, that is what can motivate you to steal for survival. (Community Resident 3)

Nevertheless, crimes in communities close to mining communities include thefts, assaults and causing harm, but a senior police officer claimed that:

These crimes are prevalent among those who engage in illegal mining. Also, illegal miners trespassing into the concessions of Gold Fields is quite common. (Police 1)

Even though other interviewees agreed that the crime rate is on the lower side, the Ghana Police Service thought otherwise. However, such crimes are prevalent among artisanal and illegal miners. A senior Police Officer indicated that:

The kind of crimes prevalent among those who engage in artisanal and illegal mining, revolve around three areas: stealing, assault and causing harm. On the count of stealing, the illegal miners usually steal dust of gold concentration from each other and most of these cases are reported to us at times. But there are times people take the law into their own hands and that leads to assault cases which can also lead to causing harm. (Police 1)

A junior ranking police officer said:

There are so many remote areas that serve as hideouts for people who have committed crimes in other parts of the country and even outside Ghana. Such people seek refuge
here because they can engage in illegal mining to survive. This notwithstanding, crimes like rape, murder, manslaughter are on a very low side in this area. (Police 2)

From the evidence presented in this section, it can be inferred that, in the absence of the mining activities, these crimes may not have existed (Archbold et al., 2014; Ruddell et al., 2014). However, this thesis establishes that since these crimes are usually among illegal or artisanal miners, they may not necessarily be as a result of Gold Fields presence, but as a result of illegal mining activities which pre-existed Gold Fields’ presence.

Security threats to Gold Fields may stem from illegal miners, community residents or employees. The researcher enquired about the highest threat to security of the mining company and was surprised when a functional manager indicated that:

*Out of the three mentioned, employees also pose a lot of security risk to the mining company through pilfering of fuel, cable theft, pieces of gold, etc. In fact employees are the most treacherous when it comes to security. As for outsiders they are obviously seen as a threat but employees may take you by surprise as you may consider them as part of the company and the least expected to commit certain crimes.* (Middle Manager 3)

Extant literature recognises external forces such as those from community members as the first line of security threat to mining companies in emerging economies (Walker, 2008). However, findings from this study identify employees as the number one threat to corporate security.

**Health and Safety Unit**

As noted above, the Health and Safety Unit forms part of the Safety Health Environment department. A lower level manager explained:

*The department basically do the occupational health monitoring, sound levels, distress, luminous intensity, health and safety education and all those things.* (Lower Manager 4)

Safety issues on-site usually comprise damage and injuries.

*An example of damage is when someone reverses into an object or even reverses into heavy mining equipment.* (Lower Manager 4)
Showing me a document from his computer monitor, the interviewee said:

If you look at our statistics you could see the damages are the highest; 43 damages, eight fires and very low injuries, just five injuries for the whole year. Out of these no lost time injuries, one restricted work injury, three medical treated injuries and one minor injury for the whole year giving a total number of five. (Lower Manager 4)

A lost time injury involves a person missing a whole day’s shift, which is, not being able to come to work. With the restricted work injury the person is treated so they can continue working, but will not continue with the job they were doing:

E.g., if the person is a mechanic he can still be at the workshop and be giving tools but not doing the actual work so in this case his work is restricted. For the medical treated injury, the person, after being treated, can go back to work. Minor injuries are just the first aid cases. (Lower Manager 4)

Gold Fields carry out mandatory alcohol and drug test for employees who have been involved in a vehicular accident or an incident in the mine. They also do random alcohol testing. An employee explained:

If you look suspicious we will test you, and should the test prove positive you are taken out of the mine to serve as a deterrent. (Non-managerial employee 1)

The well-being unit does health risk assessment monitoring of blood pressure, sugar levels, glucose, body mass index and any other related indicators of possible health issues, and counsels the workers on healthy life styles.

As a visitor, I was inducted on health and safety issues on-site by the health and safety unit. There were two induction sections for me: one before access to the administrative block, the cafeteria and non-mining sites and also one before access to the mining site, where I went for a tour. Whilst waiting for my induction, there were several contractors who were also waiting to be inducted. This was evidence of the mining company’s commitment towards health and safety. Nevertheless, the induction took less than five minutes and I perceived the whole process as a mere ritual. However, visitors are usually accompanied by a guide on-site, so it was not surprising that the induction usually only takes a few minutes.
The Community Affairs Department

As outlined in Table 5.2, the Community Affairs and Public Relations department is in charge of community engagement and social development programmes in the communities in which the mine operates. They formulate and spearhead the implementation of community relations strategies contributing to the social licence for the mine’s operations. The community affairs department operates through the Gold Fields Foundation. The rest of this section explains the activities of the Gold Fields Foundation.

In Chapter 4, it was made known that Gold Fields contributes to community development by generating local employment, training and development pathways for young people, and often significant development in infrastructure (Measham & Fleming, 2013; Michaels, 2011). However, the Ghana Chamber of Mines has a policy in place where member companies set aside a minimum of US$1 for every ounce of gold produced and also one percent of their net profit to develop their communities (Ghana Extractive Transparency Initiative, 2016). Thus, the money committed to the Foundation is actually a regulatory requirement rather than a voluntary initiative of Gold Fields. Gold Fields could have contributed beyond the minimum of a dollar of profit and ounce of gold but decided to stay with the minimum. This is evidence that, in terms of sustainability commitments, mining firms may not be willing to go beyond regulatory requirements (Essah & Andrews, 2016; Buhr et al, 2013).

Areas of community developments

Gold Fields have “five pillars” (Middle Manager 5) for community development within the area of their operations: land-take compensation, education, water and sanitation, agriculture, and infrastructure development (see Figure 5.3 for photos of some community projects). This department serves several purposes including negotiating compensation for farmers and
individuals whose farm lands and/or buildings have been taken over by Gold Fields for mining activities. Managers explained that:

*We know we are living together with the communities and we have rights to the minerals, somebody also has rights to the surface; that is where the person has his or her farm or building. So as the mine is increasing its footprint, they get affected. So we secure that land before the mining guys get there.* (Middle Manager 5)

![Figure 5.3: Community projects: A: a clinic; B: an ICT centre; C: a community centre](image)

(Source: Photographs taken by author)

Explaining how that is done the manager further explained:  

*Once we study the mine’s plan; we know where the mine is moving towards. As such we go ahead of the mining team to negotiate and compensate the owners of the surface rights* (Middle Manager 5).

Another interviewee also elaborated:
After we acquire the land, if someone has a farm on the land, we have to compensate the person before we use the plot for the mining. (Lower Manager 2)

Corroborating these claims of managers, most residents interviewed indicated that the mining company compensates residents whose lands are taken for mining activities. A resident explained:

There is the office for Local Affairs and they intercede and negotiate with the community leaders and farmers who are involved in compensation and land-take issues. (Community resident 3)

Another resident who is an opinion leader also explained:

On a few occasions people agitate on the amount given them comparing with other claimants and also looking at the fact that they have lost their source of livelihood for life since most of us here are farmers. (Community resident 1)

Similarly, in talking to residents in another nearby town, the general confirmation was that the mining company does compensate people whose lands are taken for mining operations but at times the compensation package may not be enough when compared with peers who were also compensated by Gold Fields in the same area. A senior officer of the Environmental Protection Agency Ghana elaborated:

We have formed a Resettlement Negotiation Committee so that people will then determine what they think will go well with them in terms of their new settlements. We also want to see how they addressed community concerns because definitely you cannot meet all the needs of the people; you cannot relocated all their farms, you can relocate their house structures, certain farms you have to compensate, others you may not compensate. (Regulator 2)

On how funds are allocated, as at 2015, Gold Fields had invested $5.31 million dollars in projects in the community. I was shown the statistics (a pie chart and a table) on funds spent on each of the categories from 2002-2015 on a computer screen in the office of the Community Affairs and Public Relations Manager. He explained as follows:

The company has invested 5.31 million dollars in projects in the community: 43% of it is under education, 9% is under health, 22% water and sanitation, 10% agriculture, and the other 16% on infrastructure such as roads, community centre etc. (Middle Manager 5)
I realised that on Sunday, the community centres and classrooms of schools constructed by Gold Fields are used for church fellowships. A church member in one of the fellowships indicated that,

_At the moment, we don’t have a church building, so for now we use this classroom with the permission of the Assembly Man [local government elected representative] of this area (Community resident 4)._ 

An official of Gold Fields also confirmed that,

_In situations where we re-locate communities because we want to mine, we make sure church buildings are constructed for them. This has always been part of the site plans for relocated communities. (Middle Manager 1)_

In chapters 3 and 4, it was noted that extant accounting studies indicated that social sustainability covers mostly physical issues like infrastructural development and education. The above finding indicates that sustainable development also includes spiritual growth of employees and residents of communities close to the mine (see Table 5.1).

### 5.4.1.2. Environmental Dimensions of sustainability

This section presents details of how Gold Fields Damang Mine practises environmental sustainability. Environmental sustainable development practices at the mine consist of rehabilitation planning and implementation, environmental pollution prevention, and environmental compliance auditing and reporting. These activities are carried out by the Safety Health Environment department at the plant site. Interviewees explained the function of this department as

_General environmental management which is made up of rehabilitating disturbed lands, pollution prevention, compliance with legal issues and engaging with stakeholders, such as the media, and communities so that we can take the concerns of stakeholders into our decision making. (Lower Manager 1)_

Further details were given by Lower Level Manager 3:

_We have the environmental manager and his team who manage issues on permits and ensure that permit conditions are implemented. We make sure the existence of our_
mines does not have any impact on the people. So our job is to control the negative dimensions of Gold Fields’ mining operations on the ecology.

Rehabilitation planning and implementation

A major function of the environmental department is to ensure the reclamation of disturbed lands after mining operations. Gold Fields Damang Mine’s operations disturb land which has been used mostly for farming activities by community members living in the catchment areas of the mine. The mine rehabilitates the land after mining operations so it can be used again for farming. An interviewee explained,

*We may not get 100% rehabilitation. We make sure we rehabilitate the disturbed areas to a standard that is cultivatable. So far, the company have disturbed about 1,598 hectares and have successfully rehabilitated 527 hectares as at December 2015. (Lower Manager 2)*

These comments from Lower Manager 2 indicate that, even though it is popularly believed that reclamation can restore scarred land to its former state (Cao, 2007), post-mining reclamation can only lead to a partial restoration of biodiversity (Gould, 2011; Essah & Andrews, 2016).

Mining at Gold Fields involves getting the ore from the pits which are then transported into the mill for processing to commence. After processing, the waste is carried through tubes into a tailing storage facility to avoid leakage into the environment. Once a tailing facility is full, it is then covered and the land is reclaimed. On the site visits, I photographed an active tailing storage facility, a tailings storage facility under construction and an active mining pit, as shown in Figure 5.4.
Figure 5.4: A: Active tailing storage facility; B: Tailing storage facility under construction; C: Active mining pit

(Source: Photographs taken by author)

To make sure that the rehabilitated lands are good for the cultivation of crops, Gold Fields set up simulation farms on these lands. The produce from these lands are taken to a laboratory for testing to see if they are fit for consumption. An interviewee explain:

After rehabilitation, we do what we call ‘demonstration farming’ where we plant all sorts of farm products to see if they will do well. Then we take some to a lab and test to see if someone plants cassava here in the future it will be good to eat. (Lower Manager 3)

I visited a demonstration farm as part of my site tour. My photographs in Figure 5.5 show a mined area in the process of rehabilitation: a demonstration farm, a rehabilitated tailing storage facility and an oil plant plantation on a rehabilitated mining area. I saw crops such as cabbage,
garden eggs, plantain and oranges planted. I saw the environmental department employees take about seven cabbages for testing at the laboratory, confirming the assertions above of the environmental officer who was not part of the tour.

Figure 5.5: A: rehabilitation of a mined area in progress; B: demonstration farm; C: rehabilitated tailing storage facility, D: oil palm plantation on rehabilitated mining area  (Source: Photographs taken by author)

Extant studies have acknowledged that government intervention in business and public sector organisations encourages environmental and social responsibilities (Gray et al., 1997; Gray et al., 1987; Unerman et al., 2007) and that increasing regulation encourages or even forces greater sustainability (Dummett, 2006). According to Essah and Andrews (2016) in terms of environmental policies and legislation in Ghana, the environment did not receive significant attention in Acts of Parliament before the 1980s. Consequently, the Environmental Protection
Agency was established through the Environmental Protection Agency Act, 1994 (Act 490).

The Environmental Protection Agency’s key mandate is

To prescribe standards and guidelines relating to the pollution of air, water, land and any other forms of environmental pollution including the discharge of waste and the control of toxic substances (Act 490, Section 2h).

The Act establishes that every project with a potential impact on the environment must be registered with the Environmental Protection Agency. The Environmental Protection Agency has the mandate to request an Environmental Impact Assessment in respect of any undertaking that it considers potentially detrimental to the environment (Act 490, section 12).

A senior member of the Environmental Protection Agency Ghana indicated that his office ensures that organisations adhere to the provisions in the Environmental Impact Assessment and that failure to do so could result in the withdrawal of environmental permits. The interviewee explained:

*The Environmental Impact Assessment is conducted by the proponent; so if you are going to do mining, you need to tell us that the project is going to impact on the environment in terms of A, B, C, D. So you will do the Environmental Impact Assessment then you bring it to us for review. If the conditions are implementable upon review, we give approval for operations to commence.* (Regulator 1)

Another official of the Environmental Protection Agency Ghana also remarked that

*Mining companies like Gold Fields have no option other than to reclaim the disturbed lands; they pay a bond into an account assigned by the government of Ghana and this bond will only be released after all disturbed lands are reclaimed.* (Regulator 2)

Many residents also asserted that the mining companies do rehabilitation of disturbed lands and have reduced water pollution. An interviewee who resides in the nearest town to the mine informed the researcher that,

*In terms of rehabilitation as far as I know, they cover their pits and they plant trees.* (Community resident 5)
Interpreting the responses from respondents and observations made by the researcher, the mining firm appears to reclaim their disturbed lands. However, in the opinion of an official from the Environmental Protection Agency, this is partly due to the controls the Government of Ghana has put in place to ensure that mining companies reclaim lands that have been disturbed by their operations. As part of the measures is a reclamation bond: money set aside by the mining firms yearly as collateral for disturbed lands. Thus, should the mining company refuse to restore disturbed lands, such monies are kept by the government of Ghana. A lower level manager at Gold Fields confirms what the Environmental Protection Agency official said:

Part of our closure plan is the reclamation bond, which is an amount of money that we always deposit in the bank. That is a guarantee should the mine close up without rehabilitating disturbed lands. (Lower Manager 4)

A middle manager gave details of the amount with banks in Ghana.

We have about $2.25 million with STANBIC Bank and $5 million with Barclays. So about a total of $7.25 million as reclamation bond for Damang Mines. (Middle Manager 2)

Commenting on whether such bonded funds could be retrieved on the closure of the mine, an interviewee perceived that the company could not retrieve the entire bond:

It’s not possible because the last day that you mine is left not rehabilitated, so there is always a pit you leave behind. (Middle Manager 2)

Even though some studies have claimed that reclamation can restore scarred land to its former state (Cao, 2007), evidence from this study corroborates that post-mining reclamation can only lead to a partial restoration of biodiversity (Gould, 2011; Essah & Andrews, 2016). An interviewee said,

We do our best to restore the land that we disturb even though we accept that we can’t get it fully restored. (Lower Manager 2)
The environmental department also looks at pollution prevention, as well as creating environmental awareness and organising training sessions for employees and management. This involves preventing pollution of any kind: water quality, air quality, noise to the road and disturbance to bio-diversity. As part of pollution prevention measures, Gold Fields has procedures and mechanisms such as a master list of chemicals, training sessions on how to handle hazardous chemicals, an environmental monitoring team and a system of handling community complaints. As a lower level manager explained:

*The enforcement of our hydro-carbon handling procedure, monitoring and constant training of staff on how to handle dangerous chemicals we have in place. ...it is my responsibility to train the mining crew on the procedure in handling chemicals, handling hydro-carbons, how not to disturb the forest, amongst others, so that it can minimise the interference of our activities with the environment.* (Lower Manager 2)

The environment department has a list of chemicals that are permissible on-site. If any department wants to buy a new chemical, they go to the procurement people, the procurement office verifies from the master list and if the chemical is listed then it can be bought. If the said chemical is not on the master list, then the department in need of the chemical will provide a “Material Safety Data Sheet”, with a permit form attached, to the environment department for review and approval. The department seeking to buy the unlisted chemical allows the environmental department a minimum of 24 hours to check if the chemical has no harmful effect on the environment, in which case it is approved and added to the master list. An interviewee explained that

*If we find the materials to have intrinsic properties that can be harmful to the environment, we don’t approve it. Rather, we find an alternative, another multi-compound material that can do the same job but with less effect.* (Lower Manager 2)
Environmental regulatory compliance, audit and reporting

In Tables 5.1 and 5.2, it was shown that Gold Fields’ environmental dimension of sustainability covers issues related to land degradation, water, air pollution and food contamination. It is the responsibility of the environmental unit to ensuring legal compliance with both local and international environmental sustainability standards. As outlined in Chapter 3, as a mining firm operating in Ghana, some of the local regulators in Ghana’s mining sector are the Environmental Protection Agency Ghana, the Minerals Commission, the Water Resources Commission, the Forestry Commission and the Ghana Chamber of Mines. International regulators include Gold Fields’ parent company, the International Council for Mining and Metals, the Johannesburg Stock Exchange and the New York Stock Exchange.

Environmental audit at Gold Fields is intended to identify flaws in the environmental management system and its implementation as well as to recommend corrective measures. Gold Fields have two audit procedures: internal and external. The internal audit is carried out by staff who are trained on environmental issues. The audits are scheduled quarterly for site-wide audits and monthly for facility audits. Audit staff are selected from different departments within the mining company. An interviewee explained that

*Internal audits are conducted by employees who have been trained to conduct audits. The employees are from various departments including the environmental, engineering, metallurgy and mining. (Lower Manager 3)*

The external audit by regulators comprises surveillance and recertification. The surveillance is done by regulators such as the Environmental Protection Agency Ghana and the Minerals Commission Ghana. Based on the content of the Environmental Impact Assessment, regulatory bodies conduct their annual audit to determine renewal or termination of environmental permits. Beside the audit by regulators, a surveillance audit is done by certification bodies
including ISO and OHSAS for the purpose of recertification every three years. A Senior Official at the Environmental Protection Agency Ghana elaborated:

*External audit involves surveillance by regulators and recertification by ISO and OHSAS are done once a year and every three years respectively. Besides the surveillance and recertification audits, another external audit is done by an accredited body sent by corporate from South Africa and usually KPMG.* (Lower Manager 2)

In a document presented to analysts a function of the environmental department included “Monitoring and reporting (blast, dust, noise, water, soil)” (Gold Fields, 2015). The environmental department furnishes the GRI with sustainability reports every month via the parent company which processes and forwards them to the GRI. An interviewee added:

*Our department is also responsible for reporting to industrial associations like the Ghana Chamber of Mines, the Carbon Disclosure Index and the Global Reporting Initiative on our sustainability figures every month.* (Lower Manager 3)

Another interviewee indicated that reporting for

*The GRI is being managed at the corporate level, South Africa, when I capture the data and forward it to corporate.* (Lower Manager 2)

Regarding the content of the GRI report, a functional manager explained:

*We report on everything to the GRI: both the cost and quantities of how much went into pollution prevention, rehabilitation, environmental audit, community investments and many more.* (Middle Manager 4)

### 5.4.1.3. Economic dimensions of sustainability

This sub-section sets out the empirical data on economic sustainability practices and reporting at Gold Fields Damang Mine. As indicated in section 5.4.1 six out of ten departments’ basic functions are towards the economic dimensions of sustainability: Engineering, Mining, Mineral Resources, Finance, Metallurgical, and Heavy Mining Equipment. As Table 5.3 shows, economic activities at Gold Fields Damang Mine comprise mining and processing, with the mining activities being undertaken by the Mining, the Mineral Resources and the Heavy
Machinery and Equipment departments. The processing activities are undertaken by the Metallurgy and the Engineering departments.

**Table 5.3: Summary of mining and processing cost at Gold Fields Damang Mine**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Actual 2011</th>
<th>Actual 2012</th>
<th>Actual 2013</th>
<th>Actual 2014</th>
<th>Forecast 2015</th>
<th>LoM Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining USD/t</td>
<td>2.44</td>
<td>1.97</td>
<td>2.00</td>
<td>2.16</td>
<td>2.28</td>
<td>2.66</td>
</tr>
<tr>
<td>MRM Dept.</td>
<td>0.09</td>
<td>0.12</td>
<td>0.36</td>
<td>0.53</td>
<td>0.38</td>
<td>0.38</td>
</tr>
<tr>
<td>HME Dept.</td>
<td>0.86</td>
<td>1.07</td>
<td>0.82</td>
<td>1.54</td>
<td>1.16</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3.39</strong></td>
<td><strong>3.16</strong></td>
<td><strong>3.19</strong></td>
<td><strong>4.23</strong></td>
<td><strong>3.81</strong></td>
<td><strong>4.05</strong></td>
</tr>
</tbody>
</table>

| Processing USD/t |             |             |             |             |               |             |
| Metallurgy Dept.| 6.66        | 7.23        | 7.71        | 6.86        | 6.13          | 6.20        |
| Engineering Dept.| 8.05        | 11.46       | 9.77        | 11.54       | 9.73          | 8.02        |
| **Total**       | **14.71**   | **18.70**   | **17.48**   | **18.41**   | **15.86**     | **14.22**   |

(Source: Gold Fields, 2015)

The sustainability economic dimensions at Gold Fields Damang Mine are related to the financial contribution to stakeholders such as shareholders, employees, and the local community. At the plant level, it has been operationalised as mining and processing (Figure 5.6 shows Gold Fields Damang Mine’s processing site).
Being a gold mining company, Gold Fields’ revenues are directly related to the prices of gold and copper (Gold Fields, 2015). A document presented by the general manager to analysts who visited Damang Mine in 2015 represents Goldfield’s economic performance as driven by the following operating philosophies:

- Reduced capex without impacting long-term future of operation; focus on margin rather than ounces – quality rather than quantity; improved selective mining and grade control;
- Improved mining and processing efficiency; aggressive BI [business Improvement] and drive for operational excellence; focused cost control; daily departmental cost reports;
- Cost review meetings; cost interventions (Gold Fields, 2015, p. 7).

In abiding by these philosophies on the economic dimensions of sustainability, Gold Fields Damang Mine calculates several financial indicators of maximisation of shareholders’ wealth:
cost reduction, the maintenance of excellent financial performance, and operational issues such as cash to cash cycle time, quality and growth of our asset portfolio, and energy consumption.

Interviewees explained that:

*When you come to the finances, we are looking at debt reduction, sustainable free cash flow margins and then improved investor and analysts’ confidence. We need to manage the business in such a way that investors will have that confidence within the business to make sure that whatever we do, they will have good returns on the monies they’ve invested.* (Middle Manager 2)

Another functional manager claimed that

*When we talk of the business optimization, we improve the quality and growth of our asset portfolio, energy cost management, technology and innovation, improve safety practices.* (Middle Manager 1)

The World Gold Council recommends mining companies to calculate all-in sustainable cost (AISC) and all-in cost. The all-in sustainable costs are operating costs plus all costs not already included therein relating to sustaining current production, including sustaining capital expenditure. The value of by-product revenues, such as silver and copper, is deducted from operating costs as it effectively reduces the cost of gold production. All-in costs start with all-in sustainable costs plus additional costs which relate to the growth of the Group, including non-sustainable capital expenditure and exploration, and evaluation and feasibility costs not associated with current operations (Gold Fields, 2016).

As seen in Table 5.4, key metrics at Damang Mine’s all-in sustainable cost are safety, ore mined, total waste mined, total mined, ore milled, head grade, recovery, gold produced, operating cost, and capital expenditure.
This section has covered the sustainability practices and reporting carried out by the mining company, which leads to the next section on why the mining company pursues sustainability in their operations.

5.4.2. How sustainability information is shared at Gold Fields

Doorasamy and Garbharran (2015) claim that it is critical to educate and inform managers and employees on issues of sustainability and to assess the level of awareness of sustainability related practices. Interviewees were asked how they are informed and involved in sustainable development practices. It was revealed that there are programmes in place at Gold Fields for creating sustainability awareness. These include fortnightly and monthly sustainability meetings, departmental meetings such as “walk the talk” and “tool box” meetings, email alerts and notices boards on-site. Through these media, reports on health and safety, security, community developments, production in terms of gold and production in terms of ore mined.
and waste mined are disseminated. Sustainability related information shared covers both financial and non-financial dimensions of the mining company’s operations.

Weekly meetings are held at departmental and unit level. Employees and managers raised issues of concern at the department and sometimes issues relating to other departments that affect their work. A functional manager explained:

*We are always constant in engagement with our employees. Each department holds weekly meetings to shared ideas on incidents that happened within the department that affect their work* (Middle Manager 1).

The General Manager, functional managers and employees are invited to monthly sustainability meetings. At these meetings, employees bring to the attention of the supervisors and their colleagues any sustainability issue that needs to be addressed and they discuss and set measures they have to put in place. A functional manager elaborated,

*At the monthly meeting too we invite employees to give us feedback or give any concerns about their work place and once this is raised we pick it up* (Middle Manager 1)

Explaining what takes place at the “tool box meetings”, an employee commented:

*Before the start of any shift we have the tool box meeting. In the tool box meeting, the workers are given the opportunity to talk about any safety violations or any opportunity for improvement in safety that they observed during the previous days* (Non-managerial employee 1).

Information shared via the intranet are issues that management deem necessary for employees and management to be aware of. These could be incidents on-site such as accidents and safety related matters and changes made on-site. A functional manager elaborated:

*We do share information across the board through our intranet whenever there are issues or there are things that we need to discuss or share before our any of the scheduled meetings.* (Middle Manager 4)

Apart from the periodic meetings, email alerts and the spread of information via the intranet, every month the Safety Health Environment and the Finance Departments produce topics for the month which are usually displayed on notice boards (see Figure 5.7). These notices are
placed at the main entrance to the mine, at the reception and in the administrative block. Therefore management, employees, contactors and visitors have access to these notices.

![Image of environmental notices]

**Figure 5.7: Samples of environmental notices on employees’ noticeboard**

*(Source: Photographs taken by author)*

Pointing to a notice at reception, an employee explained:

*To create environmental awareness, the departments involved in sustainability come out with awareness topic for the month. So as you can see from this notice board, the environmental topic for the month of June is protecting wild animals. (Non-managerial employee 3)*

A lower level manager also mentioned:

*Every month too we come up with a safety topic when we go for the mine’s safety meetings. In the month of July, we were talking about avoiding complacency. (Lower Manager 4)*

A functional manager also said that,
Every month we have a cost message for all employees, so last month’s was avoid wastage and save cost. Throughout the month we keep educating them on how to reduce waste and the benefits of reducing waste. (Middle Manager 2)

On my first visit, which was in January, I found on the notice board: “Know your environmental policy” as the environmental topic for the month; on my second visit in June the topic for the month was “protect wild animals” (Observation) (see Figure 5.7).

On checking on the Facebook page of Gold Fields Foundation, I came across uploads of programmes held in stakeholder communities. In the photos were managers and employees from the Community Affairs, the Environment Safety and Health and the Protection Services giving awards and speeches to members of the community (Gold Fields Foundation Facebook page, accessed 14 April 2016). This evidence that a number of functional managers and staff of Gold Fields are involved in the work of the community affairs department gave the researcher the impression that employees and managers across several departments are more involved in social sustainability than environmental sustainability. However, this was explained by managers:

Environmental sustainability processes form part of each employee’s KPIs [key performance indicators] and are mostly done internally unlike the social one which is done openly in communities. (Middle Manager 1)

5.4.3. Sustainability policies and standards at Gold Fields Limited

Some researchers have argued that the origin of environmental problems on the part of corporate organisations is the lack of an environmental management policy (Ahmad et al., 2009). Mezinska and Strode (2015) and Durant and Fiorino (2017) believe the purpose of ISO 14001 is to assist companies to implement environmental policies that fulfil certain criteria.

Respondents were asked to identify sustainability standards that Gold Fields adopts. All of them mentioned that Gold Fields as a parent company has formal written sustainability policies.
These include policies on: the environment, sustainability, occupational health and safety, community and indigenous peoples, risk management, human rights, engagement, ethics and corporate governance, material stewardship and supply chain management. On a site visit, the researcher saw copies of sustainability policies on notice boards. In terms of standards,

*Gold Fields as a company subscribes to ISO 14001 and OHSAS 18001. My department is responsible for implementing these standards but the general manager has the overall responsibility.* (Middle Manager 4)

Even though there are policies that cover various dimensions of sustainability, the social dimensions which relate to security and community development do not have any international standards. An interviewee explained that,

*My department is yet to sign on to a standard but we have ISO in sustainability for the environment and then we’re also on GRI.* (Middle Manager 5)

*There are several standards here but what I remember very well is that ISO 14001 is for the environment.* (Non-managerial employee 3)

A manager trying to paint a picture that they have international standards for community development claimed that

*The Community Affairs department are yet to subscribe to international standards. Nevertheless, there are internal policies and national regulations which guide their operations as managers. Besides, the ISO and OHSAS do apply to all of us* (Middle Manager 5).

Two lower level managers explained that since the two standards are under one department, ISO 14001 and OHSAS are integrated. The environmental department uses ISO 14001, and the health and safety unit adopts OHSAS 18001: 2007 (see Figure 5.8). In sustainability reporting, they are part of the GRI, the Dow Jones Sustainability Index, the International Council on Mining and Metals and the United Nations Global Compact (Gold Fields, 2015). Apart from these standards, other units, such as Security and Community Affairs, comply with regulations of the Environmental Protection Agency Ghana, the Minerals Commission and the Ghana Chamber of Mines.
Gold Fields subscribes to more than one international country-specific standard. Escanciano and Iglesias-Rodríguez (2012) point out that mining companies with more than one international quality standard (e.g., ISO 9001, ISO 14001, and OHSAS 18001) are more likely to ensure total quality management. Extant studies indicate that having a sustainability policy is a foundation for any organisation in establishing sustainable development practices (Arimura et al., 2008; Epstein & Buhovac, 2014; Granly & Welo, 2014). In this regard, the findings above could imply that, in gaining legitimacy, Gold Fields is committed to ensuring greater transparency, corporate responsibility, stakeholder accountability, veracity, and usefulness in data reported (Milne & Gray, 2007; Buhr et al., 2014; Boiral & Gendron, 2011; Ahmed & Hassan, 2003). Figure 5.8 presents photos of international sustainability standards subscribed to by Gold Fields Damang Mine.

Figure 5.8: Gold Fields Damang Gold Mine ISO14001 and OHSAS 18001 certificates
(Source: Photo and document obtained by author)
A sustainability policy is a framework for the organisation to improve and monitor their environmental impact (Epstein & Buhovac, 2014; Granly & Welo, 2014). The International Council for Mining and Metals has described the central role of a written policy in their technical brief on sustainability: “Membership of ICMM requires a commitment to our ICMM 10 Principles into corporate framework for sustainable development in the mining and metals industry” (ICMM, 2015, p.1). The results of this study found that Gold Fields as a parent company have formal written sustainability policies in place and the contents of these policies are in consonance with the 10 principles of the International Council for Mining and Metals.

In this section, I explored the sustainable development practices of Gold Fields Damang Mine. A question that may come to mind is why the case mining company undertake these identified initiatives towards sustainability? These motivations are discussed in the next section.

5.5. Motivations for mining firms in Ghana to practise sustainability

This section presents responses from Gold Fields’ management, employees, community members and regulators on why they practise sustainability. Both proactive and reactive institutional factors were provided by interviewees. Nevertheless, the need for sustainable development and for a response to global warming are not as obvious, neither are they regarded as so urgent. Thus, the motivations for sustainable development initiatives are to do with pressure from both internal and external stakeholders. As Gold Fields Damang Mine is a subsidiary of a multinational mining company, managers undertake sustainability activities in compliance with expectations of the parent company as well as those of local stakeholders such as regulators, employees and community members (see Figure 5.1).

Evidence of stakeholder pressure on the mining firm to act sustainably was obtained during data collection. The mining firm’s activities towards sustainability are perceived to achieve the following: protection of the corporate image, winning and maintaining investor confidence,
realising cost reduction related benefits as well as pursuing the interest of future generations and the national interest. These are explained in detail in the rest of this section.

In regard to protecting the corporate image, Gold Fields practice sustainability so as to be regarded as eco-friendly and a socially responsible company in the sight of investors and other stakeholders. A cost accountant elaborated:

_We operate sustainably in order to protect the corporate image that Gold Fields has built over the years._ (Non-managerial employee 1)

A lower level manager also commented:

_Like any other company, the image of the company to the public or outside world is more important. Gold Fields have an image to protect and being sustainable serves as one of the means of protecting the image of our organisation. For instance, it will not speak well of us if it gets to the public that Gold Fields is dumping here and there._ (Lower Manager 3)

Thus, similar to earlier studies (such as Hahn & Scheermesser, 2006; Gürhan-Canli & Batra, 2004; Morioka & Carvalho, 2016; Vries et al., 2015), evidence from the participants indicate that image and reputation play an important role in the case mining company as a motivator to engage in sustainable development practices.

Investors are likely to consider the sustainability of business operations before investing and therefore demonstrations of sustainability are important to their investment decisions. Consequently, winning and maintaining investor confidence is a pressure on mining firms in Ghana to operate sustainably. A lower level manager commented:

_We operate sustainably to secure our future and investments. You know investors are not Father Christmas, so they will not invest if there is nothing in return for them and that is the essence of sustainability._ (Lower Manager 4)

Another functional manager also elaborated that

_…most investors may not invest in Gold Fields if we have a poor track record on sustainability._ (Middle Manager 4)
Figure 5.9 shows a bold notice on entry to the plant, stating:

**WE CARE FOR THE ENVIRONMENT, SAVE FUEL, SAVE ELECTRICITY, SAVE WATER AND SAVE A GREEN $.** (Researcher’s observation)

![Figure 5.9: Sustainability message on Gold Fields Damang Mine's plant site](image)

(Source: Photograph taken by author)

Even though there are cost savings associated with operating sustainably, evidence provided in this study indicates that gaining legitimacy dominates other factors that encourage mining firms to operate sustainably. Also sustainability-related cost savings appear to be related to legal compliance and gaining legitimacy, rather than voluntary and greening purposes.

A cost accountant argued that,

> When rehabilitation is done concurrent to mining operations, it reduces the cost of rehabilitation: when you wait after years before doing the rehabilitation, inflation and other factors will affect the cost of rehabilitation (Non-managerial employee 1).

As evidence of stakeholder theory, interviewees from all stakeholder groups had a strong belief that regulation is key to sustainable development practices of the mining company. An interviewee explained:

> We also want to fast-track petitions and permits and all those issues that deal with regulations. This is because when we do all that is required of us on the environmental
concerns, we don’t get too much problems with the regulators; you prevent unnecessary fines and penalties, you avoid unnecessary stop work and keep good rapport with most regulators especially when they believe you are not destroying or causing problems to the environment. (Lower Manager 1)

A functional manager also added:

You know, we are a mining company with regulators globally and locally and none of them will let you be if you don’t operate sustainably. Once you operate within permit conditions, production is not stopped, it goes on smoothly and it prevents tension and problems with regulators. (Middle Manager 2)

Interpreting the above perceptions of managers, if a mining company operates sustainably, they are most likely not to be interrupted by regulatory bodies which would eventually affect productivity. Thus, middle and lower level managers perceive sustainability to be a means of acquiring and maintaining good relationships between the company and regulators.

Inaugurating a clinic project at Wassa Damang in the Western Region, Peet Van Schalkwyk, Executive Vice President and Head of West Africa Operations, said:

Gold Fields Ghana has emerged as the leader in sustainable gold mining because the company strongly believes that it is important to gain, maintain and renew its social license to operate from its stakeholder communities (Daily Guide, 2012, February 3).

According to management, by operating sustainably, stakeholders such as community members allow the smooth operations of the company without interference. Stakeholder theory proposes that, based on the perceptions of stakeholders on how sustainably a company is operating, stakeholders can heavily penalise or highly elevate companies (Sen & Bhattacharya, 2004). Similarly, at Gold Fields, sustainable development initiatives are to maintain good relationships with immediate communities who could be violent if aggrieved. A functional manager claimed that,

At Gold Fields, we maintain good relationships with communities in our catchment areas and that is why there is less agitation; our community social activities are very up-to-scratch. (Middle Manager 5)
Another interviewee also explained what could happen if immediate communities are agitated:

*We also want to make sure that the community is satisfied or else they will block the road for hours and that will affect us.* (Middle Manager 1)

Stressing the economic effect of community actions on the mining company in times of agitation, a manager indicated:

*A halt in operations for even an hour could cause a loss of tens of thousands of dollars.* (Middle Manager 2)

Community members, the academic and regulators to large extent gave similar opinions as management. They indicated that pressure from society is critical for effective sustainable development practices in Ghana’s mining sector. The interviewees provided evidence of previous incidents that had culminated in attitudinal change of management of mining companies in their sustainable development practices. A community resident said,

*My brother, from my experience in this neighbourhood, if the communities have not been violent on the mining company, I don’t think they will do that much for us.* (Community Resident 5)

Explaining his opinion from past events, another community resident said,

*The employment situation was really bad until 2009 when we demonstrated violently against them. Since then it’s been quite okay.* (Community Resident 3)

Supporting the opinion of community members, the academic argued with an example of a mining company which has been closed down. He explained:

*The Environmental Protection Agency Ghana has been very strict on them lately. In fact, there are a number of these mining companies such as Adamus Resource Limited that have been shut down for non-compliance. So I perceive that societal pressure and law enforcement is key to the success of good environmental practices from the mining industry.* (Academic)

Regulators also perceive, based on past and present environmental hazards from the mining sector, that, if not regulated, mining companies would have caused more harm. A senior member of the Environmental Protection Agency Ghana emphatically stated:
To be frank with you, Kwame, if we leave these mining firms to operate without any law enforcement, they will turn this nation upside down. Just look at the damage caused by the illegal miners. So we give them no option than to operate sustainably. (Regulator 2)

Another interviewee at the Environmental Protection Agency Ghana also remarked:

It is mandatory upon them to operate sustainably and that is why this office was opened on the demand of the chiefs of nearby communities’ members who demonstrated against the mining firm some years back and our proximity alone to them serves as a deterrent. (Regulator 1)

The fourth motivation comprises normative or ethical reasons, such as the interest of future generations and the national interest. In explaining how future generations can benefit from sustainable development practices, a functional manager asserts that:

The huge amount of waste rocks we generate could be useful for the future generations in diverse ways; like a quarry or turning these rocks into something else. We are mining and taking the ore and even with that not 100% is taken and we also keep rehabilitating the lands for the generations to come. (Middle Manager 4)

Another interviewee remarked that,

When we operate sustainably, we also protect the national interest. (Lower Manager 4)

The researcher witnessed the start of renovation on the road during phase two of his data collection in June–August 2016. Evidence gathered in this study shows the road is being reconstructed, probably because it would be beneficial to both the communities and the mining company. In the 2016 Integrated Annual Report, Gold Fields indicated that the 29 kilometre road is been upgraded in partnership with the Ghana government at a total estimated cost of $17 million. The benefit of the project was indicated:

Benefit to the community:

During construction of the road, job opportunities will primarily go to members of our impacted communities. The improved road infrastructure will benefit all public road users as travel times, vehicular accidents and vehicle maintenance costs will be reduced.
Roadside communities will no longer experience dust emissions since the road will be surfaced (p. 104).

Benefit to Gold Fields:

Gold Fields will save on the cost of transport as the maintenance of vehicles transporting labour, goods and materials will be reduced. Road maintenance costs will also be reduced. The improved infrastructure will also reduce employees’ travel time by 35 minutes per journey, could limit driver fatigue and will enable emergency services to operate more efficiently. (p. 104)

A management interviewee indicated:

Since 2014 we have been doing what we call shared value, where we and the community also benefit from the community development projects. (Middle Manager 5)

Based on the evidence presented in sections 5.4 and 5.5, it can be inferred that despite a range of motivations put forward, various stakeholders agree that the case mining companies have obligations beyond economic and legal obligations. In fact, internal stakeholders like management and non-managerial employees see sustainable development initiatives of the case mining company as an obligation towards external stakeholders who expect them to operate sustainably. This is similar to the assertion of Sen and Cowley (2013) who claim that companies use sustainability as an opportunity to show how the business shares the social values of their stakeholders.

Furthermore, management and employees’ normative perception of sustainability in itself could be an indication of the recognition that they give to various external stakeholders (Adler & Kwon, 2002), instead of solely considering the economic expectations of dominant stakeholders. Yet, despite the assertion of some interviewees that sustainable development at Gold Fields relates to the ability of future generations to meet their needs, much of the mining
company’s effort seems to be directed towards a business case for sustainability. This corroborates Murray et al.’s (2010) claim that companies’ sustainability initiatives to a large extent do not integrate the principles of sustainable development, except where they coincide in protecting their own core business.

Companies choose to maintain existing projects when there is pressure from communities, and also benefit from renovating or initiating such projects. Porter and Kramer (2011) recently initiated the concept of shared value which is understood as ‘creating economic value in a way that also creates value for society by addressing its needs and challenges’. This is claimed to have reinforced the idea that ‘good’ business can contribute to sustainability (Arjaliës & Mundy, 2013). Some observers, however, perceive companies as exploiting sustainability issues exclusively for the purposes of increasing shareholder wealth, with little or no genuine association to sustainable development (Gray, 2010; Milne et al., 2006). The latter may explain why some community residents claim that companies, including Gold Fields Damang Mine, decide for them which project to initiate for communities instead of prioritising communities leaders’ suggestions. In the case of Ghana, although most mining companies have focussed on developing their communities through various sustainability programs, findings from this study indicate that this has not translated completely into sustainable development because community members still complain about several issues including a poor maintenance culture which undermines the concept of sustainability.

5.6. Chapter summary

The chapter presented the stakeholders of Ghana’s Mining sector and elaborated on how sustainability is understood by them. It detailed sustainable development practices at Gold Fields Damang Mine and examined various reasons why Gold Fields initiates sustainable development projects.
Being a subsidiary of a multinational mining company, Damang Mine’s stakeholders identified could be categorised as internal and external as well as local and international with diverse and conflicting interests. Contrary to extant studies, individuals can be part of more than one stakeholder group (Öberseder et al., 2013) and in situations of stakeholder conflicts, such stakeholders would have to choose which stakeholder group to support. Some stakeholder groups could be weak, but in situations of conflicts, weak stakeholders could come together to form a stronger stakeholder group.

Stakeholders in the same industry, including people controlling the organisation, had various perceptions of what sustainable development is about, with lower managers, employees, community members and regulators focussing on social and environmental sustainability whilst middle management paid more attention to economic sustainability. This is explainable: regulators, employees and lower level managers may not be held accountable for financial aspects of sustainability; hence they pay less attention to the economic aspects.

Several motivations for mining firms in Ghana undertaking sustainable development initiatives were identified. They did not recognise the need for sustainable development as a response to global warming, nor do they regard this ecological reason as so urgent compared to economic sustainability. The need for sustainability is also not understood in the same terms by each stakeholder group. As Damang Mine is a subsidiary, its managers undertake sustainability activities in compliance with expectations of the parent company, as well as local stakeholders such as regulators, employees and community members. Sustainable development initiatives are also undertaken to meet requirements of international stakeholders such as the GRI and the International Council for Mining and Metals. Thus, the mining firm’s sustainability activities towards sustainability are perceived to achieve the following: protection of the corporate image, winning and maintaining investor confidence, cost reduction related benefits as well as
pursuing the interest of future generations and the national interest. It was found that, in the name of shared value, the company may not be interested in initiating capital intensive community development projects unless the company will also benefit from such initiatives.
Chapter 6: Analysis of sustainability and accounting at Gold Fields and their related challenges

6.1. Introduction

The examples of sustainable development practices of mining firms in Ghana presented in Chapter 5 provided an opportunity to explore how stakeholders in Ghana’s mining sector perceive sustainability, and how and why sustainable development projects are initiated by a particular mining in Ghana, Gold Fields Damang. Sustainable development practices were more a matter of meeting stakeholder expectations rather than following the principles of sustainable development.

In chapter 3 extant studies established the link between stakeholders’ aspirations and sustainability practices, performance measurement as well as accountability. It was shown that the link between planning, accounting and reporting could enable companies to measure and communicate their sustainability performance against stakeholders’ expectations (Kaur & Lodhia, 2018; Schaltegger and Wagner, 2006). Taking inspiration from such notions, this chapter presents findings and analysis on the last three research questions: How do stakeholders perceive sustainable development performance of Ghana’s mining industry? What are the roles of accounting in sustainable development practices within Ghana’s mining industry? What are the challenges facing mining firms in Ghana in relation to sustainable development practices?

The chapter is structured as follows: Section 6.2 examines the stakeholder perception of sustainability performance of Gold Fields Ghana. Section 6.3 presents the role of accounting in sustainable development practices. Section 6.4 examines how management accountants are involved in sustainable development practices at Gold Fields. Section 6.5 analyses the challenges of sustainable development in Ghana’s mining sector. Finally, section 6.7 summarises the chapter.
6.2. Perceptions of Gold Fields’ sustainability performance

This section analyses the findings on how Ghana’s mining sector stakeholders perceive the sustainability performance of Gold Fields and the mining sector at large. It is consistent with a phenomenon outlined in Chapter 3, that previous studies have moved the focus of enquiry beyond the level of disclosure to an examination of what is actually being said in the sustainability reports (Clarkson et al., 2008). In section 6.2.1, I show the indicators published in the Environmental Protection Agency Ghana’s Disclosure Rating (known as Akoben). Then I use what was said by interviewees to show the varying perceptions of these indicators and the sustainability performance of Gold Fields by stakeholders in sections 6.2.2 to 6.2.4 in order of social, environmental and economic performance.

The views differ between internal stakeholders (managers and non-managerial employees), on the one hand, and community groups and other external stakeholders on the other hand. Whilst the external stakeholder groups rated the case company’s sustainability performance quite low in their areas of interest, they tended to rate the sustainable development performance higher in other areas of interest.

6.2.1. Akoben’s environmental and social performance ratings of Gold Fields Ghana

The institutionalisation of national and international sustainability awards is also identified in this study as a key factor for good performance. Such promotional initiatives which are reported on national television and in newspapers could either be punitive or raise the image of companies. Table 6.1 shows the social and environmental performance ratings on the Akoben of Gold Fields’ mining companies up till 2012 when the last report was made available to the public. In Table 4.7 it was shown that the colour ratings of gold, green and blue publicly recognise good performing companies, while red and orange ratings bring public pressure on
companies to hastily improve their performance. Performance indicators rated are legal issues, hazard waste management, toxics releases, non-toxic releases, monitoring and reporting, environmental best practices, community compliance management and corporate social responsibility (see Table 6.1).

**Table 6.1: Akoben’s rating of Gold Fields sustainability performance**

<table>
<thead>
<tr>
<th>Indicators/year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal issues</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Hazard waste management</td>
<td>Blue</td>
<td>Blue</td>
<td>Red</td>
<td>Blue</td>
</tr>
<tr>
<td>Toxics releases</td>
<td>Blue</td>
<td>Blue</td>
<td>Red</td>
<td>Blue</td>
</tr>
<tr>
<td>Non-toxic releases</td>
<td>Blue</td>
<td>Blue</td>
<td>Orange</td>
<td>Orange</td>
</tr>
<tr>
<td>Monitoring and reporting</td>
<td>Orange</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Environmental best practices</td>
<td>Orange</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Community compliance management</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>CSR [corporate social responsibility]</td>
<td>Gold</td>
<td>Gold</td>
<td>N/A</td>
<td>Gold</td>
</tr>
<tr>
<td><strong>Final performance rating</strong></td>
<td>Orange</td>
<td>Blue</td>
<td>Red</td>
<td>Orange</td>
</tr>
</tbody>
</table>

(Source: The Environmental Protection Agency Ghana, 2012)

On environmental performance (legal issues down to environmental best practices), out of the 24 cells, Gold Fields scores from 2009 to 2011 were two red, four orange and 18 blue cells. Social scores were four greens for community compliance management and three yellows and one unshaded cell for corporate social responsibility. More than half of the ratings in Table 6.1 are grading category blue indicating adequate compliance, particularly with legal issues. However, the overall rating for Gold Fields was a score of orange (not compliant) in 2012 and 2009 and the best performance in 2010 was followed immediately by poor overall performance in 2010. The trend in ratings and the comments made by the Environmental Protection Agency Ghana officials are consistent with extant studies that show that mining companies are basically
doing the barest minimum in terms of legal compliance and not going the extra mile beyond what is legally required (Essah & Andrews, 2016). Nevertheless, regulators indicated that mining firms including Gold Fields appear to do more reporting and compliance to gain legitimacy in the sight of external stakeholders both inside and outside Ghana. An official at the Environmental Protection Agency indicated that

*Mining firms are now proactive since the commencement of Akoben, which is a national award with results published. Since mining firms are more willing to be seen as being sustainable, they submit reports and ensure better performance than when there were no promotive benefits to the regulatory process.* (Regulator 2)

Consequently, this study establishes that since companies are willing to be seen as good corporate citizens, initiatives such as Environmental Protection Agency Ghana Akoben ratings may contribute even more towards sustainable development practices than legal enforcement.

The concept of stakeholder proximity, which is defined as spatial nearness of stakeholders to the firm (Driscoll & Starik, 2004), implies a high level of involvement in a firm’s processes, allowing for better insights into company’s affairs which in turn leads to stakeholder satisfaction. In line with this proposition, the mining company has particularly good scores for community compliance and commitment to corporate social responsibility. The perceived good performance in community development matters was attributed to communities being on alert to react to misconduct on the part of mining companies; the community will not allow them to operate if they do not grant them their requests:

*They are performing better socially because they are in a community to do their business and for them to get a good business, the community within which they find themselves shouldn’t be hostile to them. And for the community not to be hostile to the mining companies, it means that the demands of the communities must be met; if they have requested a clinic, you have to give it to them so that you have your peace to do your business and that is accounting for the high performance in social responsibility.* (Regulator 1)

Another interviewee explained further:
The mining firm is doing well in social aspects because it more of philanthropic work. Apart from that when it comes to issues with immediate effect on life, nobody will compromise; if you release, let’s say, cyanide into the environment, the impact is so instant that nobody would want to compromise on that. So, if you are polluting somebody and you have to resettle the people, the communities will not let you go scot free. (Regulator 1)

In Ghana, there are no specific regulations on social aspects of sustainability as compared to environmental aspects. Nevertheless, evidence in this study indicates that regulators perceived social performance of the case mining company as better than environmental performance (see Table 6.1). Interviewees associated the good performance in social sustainability to pressure mounted by communities around mining communities exerting pressure on mining companies to fulfil their social responsibilities. This evidence supports recent findings that companies may not be willing to do much in terms of abiding by regulations unless society ensures that these laws are enforced (Essah & Andrews, 2016; Eden & Ackermann, 1998; Freeman & Reed, 1983; Zakhem, 2008). This could also imply that making laws per se may not be enough for better sustainability performance, but rather stakeholder pressure on mining firms to act sustainability may work better than laws that are not enforced (Agle et al., 1999; Kassinis & Vafeas, 2006; Jawahar & McLaughlin, 2001; Sangle & Ram Babu, 2007). Similar to extant literature, findings from this study corroborate that the Ghanaian mining industry has had a history of discontent among Ghanaian citizens even though the initial view of the mining industry was positive due to its potential benefits to the community (Lawson & Bentil, 2014; Standing & Hilson, 2013).

6.2.2. Social sustainability performance

There were mixed responses on the social performance of the mining firm. Whilst internal stakeholders and regulators rated the social performance as good to very good, community residents and the academic rated it as satisfactory to good.
Managers and employees indicated that the mining company is “doing very good” in terms of social sustainability. Explaining why they perceived the social performance as good and very good, interviewees attributed it to minimal stakeholder agitation. Interviewees were confident that:

*We have gone quite far because we have little confrontations from our stakeholders such as regulators and community members.* (Middle Manager 3)

*We have been doing very well and I think the community is happy because the complaints from the community to the community affairs department used to be high but they have reduced.* (Non-managerial employee 1)

Another issue that was related to good performance was sustainability reporting, good policies, employees’ welfare and attention to health and safety. Interviewees indicated:

*We don’t joke with our sustainability issues... For instance, we have quarterly reports that we submit all the way to corporate on all the stuff that we do here. We also report to the GRI.* (Lower Manager 1)

*Gold Fields has a very good track record when it comes to sustainability. We have community development policies in place and have been contributing immensely towards the welfare of employees as well.* (Middle Manager 5)

*It’s not just by miracle that we don’t normally hear of community agitations. Gold Fields as a company normally looks at the health and safety of the people that we work with. That is why, for instance, in this whole month we have no lost time injury.* (Lower Manager 4)

However, it was surprising that community residents largely based their opinion first on availability of jobs in the mining company, rather than on what the company was doing in regard to community development. A resident perceived that:

*Gold Fields is not doing that bad. The only problem is that we wish they’d employ more from our communities which they don’t.* (Community resident 4)

Another community member who was more critical explained:

*The mining company is not helping us when it comes to job matters. They prefer recruiting friends and families from outside our communities.* (Community resident 1)

Indeed, many residents claimed that Gold Fields is not doing much to contribute to community development, although at least one indicated:
Conversely, some residents were satisfied that the mining company was doing well on social development. Another community member explained:

They are doing well because they award scholarships every year to community members. Once you qualify, they can sponsor your education up to tertiary level. (Community resident 3)

Similarly, another interviewee explained:

As for Gold Fields, they are doing well in terms of giving us employment and developing infrastructure. Once you are from here and you want to work with them, with persistence you can finally be employed if there is a vacancy. (Community resident 5)

Community residents’ criticisms are mainly of the mining company’s failure to employ more indigenes of communities in their catchment areas. Similar to extant studies, the latter criticism suggests that the company may not be adhering to its corporate social responsibility practices or investing enough resources into these activities (Lawson & Bentil, 2014), even though they have high ratings: since 2010-2013, Gold Fields has scored A+ in the GRI ratings and GRI 4 Core in 2015 and 2016. Thus, more sustainability reporting by organisations may not necessarily imply good performance (Higgins et al., 2018). Table 6.2 presents responses on performance indicators and ratings.

Evidence in this study indicates that even though the regulatory bodies and employees see the mining firm as doing well and regulators perceive social sustainability as “just doing good”, community members do not see it as such, rather they see the social aspect as satisfying their expectations (Eden & Ackermann, 1998; Freeman & Reed, 1983; Zakhem, 2008). The contrasts in the ratings of the Environmental Protection Agency Ghana, employees and management with those of community residents could be due to the diverse stakeholder expectations which may influence the way stakeholders examine sustainability performance. This corroborates arguments of critics of how the social aspect in particular is methodically
measured (Norman & MacDonald, 2004) and the challenges of quantification of social performance itself (Essah & Andrews, 2016) due to the difference in stakeholder interests.

Table 6.2: Responses on performance indicators and ratings

<table>
<thead>
<tr>
<th>Stakeholder categories</th>
<th>Performance indicators</th>
<th>Performance ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Social</td>
</tr>
<tr>
<td>Middle managers</td>
<td>• Stakeholder agitations</td>
<td>Good to very good</td>
</tr>
<tr>
<td></td>
<td>• Community development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduction in environmental pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Land rehabilitation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Availability of sustainability policies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Profit/loss</td>
<td></td>
</tr>
<tr>
<td>Lower level managers</td>
<td>• Stakeholder agitations</td>
<td>Good to very good</td>
</tr>
<tr>
<td></td>
<td>• Community development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduction in environmental pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Land rehabilitation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sustainability reporting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Employee safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Profit</td>
<td></td>
</tr>
<tr>
<td>Non-managerial Employees</td>
<td>• Community development</td>
<td>Good to very good</td>
</tr>
<tr>
<td></td>
<td>• Reduction in environmental pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Land rehabilitation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Employee welfare</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Profit/loss</td>
<td></td>
</tr>
<tr>
<td>Community residents &amp; community leaders</td>
<td>• Employment opportunities</td>
<td>Poor to good</td>
</tr>
<tr>
<td></td>
<td>• Community development projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Profit</td>
<td></td>
</tr>
<tr>
<td>Regulators</td>
<td>• Reduction in environmental pollution</td>
<td>Good to Very good</td>
</tr>
<tr>
<td></td>
<td>• Community development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Profit</td>
<td></td>
</tr>
</tbody>
</table>

6.2.3. Environmental sustainability performance

Environmental stewardship, with emphasis on pollution reduction and rehabilitation of disturbed lands among other factors, was also related to good performance by management and employees. A lower level manager explained:
We’ve been doing well because we watch the way we pollute the environment. We try
to rehabilitate the areas that we have disturbed and in the use of chemicals, we follow
procedures in place and almost every activity is geared towards protecting the
environment. We want to reduce the amount of chemicals that we use as well as
recycling those that we have used that can be recycled. (Lower Manager 3)

Another official of the Environmental Protection Agency Ghana claimed that the bad
environmental performance is due to the challenging nature of handling environmental issues:

It has to do with the challenges involved in managing the ecosystem: Mining companies
rely on mechanical measures to monitor their environmental activities. As such, the
slightest technical hitch can have a severe impact on the environment and most often
the mechanical fault may not be detected timely. For instance, acid rock drainage:
initially you may think that the rock is a neutral rock but as you dig deeper you can hit
a rock material that contains sulphur and therefore will interact to the environment.
Assuming this occurs in the dry season, you will not detect the acid nature of it until
maybe the rains begin to fall and then you detect that acid is being generated because
of the interaction of sulphur and oxygen ... anytime there is such a breach, you score
red. As for the social dimension, you’re being benevolent and then you score.
(Regulator 2)

The above responses from Environmental Protection Agency officials indicate that mining
companies are scoring low in the environmental assessments of Akoben because mining firms
react to pressure from nearby communities more than to legal provisions that are not backed
by enforcement. Similar to claims made by Schons and Steinmeier (2016), the case mining
company is performing well on social and community developmental issues because of the
proximity of communities to their operations, allowing those communities to pressurise the
mining firm to meet their needs.

The Environmental Protection Agency ranked environmental performance of the mining
company as red-blue (poor-good). This poor-good grade was attributed to the technical nature
of the environmental issues compared to the social aspects which were perceived by the
Environmental Protection Agency officials as philanthropic and non-technical. Furthermore,
the trend in ratings and the comments made by Environmental Protection Agency Ghana
officials are consistent with extant studies that show that mining companies are basically doing
the barest minimum in terms of legal compliance and not going the extra mile beyond what is legally required (Essah & Andrews, 2016). On the other hand, the community members, employees and managers ranked the mining firm’s environmental performance as between good and very good based on land rehabilitation activities.

Officials of the Environmental Protection Agency Ghana also rated the environmental performance of Damang Mine as satisfactory as indicated in Table 6.1. An official from the Environmental Protection Agency, Ghana said:

*Damang Mine’s systems were such that they were experiencing relatively frequent spillages. We always had issues with them till they changed management along the way. The new management learnt from the mistakes of the predecessors and introduced more effective measures to minimise spillages. They have reduced the frequency in breaking of pipelines which causes the spillage of these toxics into the external environment and now they have been putting in better measures. For instance, they have laid the pipes in channels that are lined so that it can contain any spillage. This has minimised contamination of the external environment and water pollution. Again, they have been made to establish a treatment plant for recycling and they are doing rehabilitation of degraded areas that they may not return to mine. So, in all, I think they are not doing bad.* (Regulator 2)

This official related his assessment of the mining company to their ecological performance, using indicators such as the ability to minimise environmental pollution, and to pursue rehabilitation and recycling.

Extant studies indicate that making awards to companies for sustainability encourage businesses and stakeholders to jointly find innovative approaches to sustainable development challenges (Hörisch, 2013). As indicated above, since Ghana’s first *Akoben* report in 2009, many companies have become committed to submitting the requisite data in order to be included in the rating, serving now as a positive advocacy tool for some civil society groups in Ghana (Essah & Andrews, 2016). Explaining this, an official of the Environmental Protection Agency Ghana remarked,
If you don’t submit, it goes against you right away, and this has become a very promotive law enforcement tool so they proactively submit reports. Previously, they were giving excuses and we had to chase them, but now I won’t chase you, you will take to your heels and bring the reports. (Regulator 2)

6.2.4. Economic sustainability performance

Internal stakeholders (managers and employees) rated the economic performance of the mining company as satisfactory to bad. A middle manager said:

At the moment we are experiencing a very poor performance due to the fall in gold prices. In fact, we may end up retrenching some employees if things keep on like this. (Middle Manager 2)

We have not been doing well since the fall in gold prices at the international market. Even though we keep discovering new reserves, we find it quite challenging meeting our profit targets. (Middle Manager 3)

Compared to other dimensions, middle managers rated the economic performance as bad as they related it to the fall in gold prices at the international market. However, other internal stakeholders such as employees rated the economic performance as satisfactory to good. Regulators, the academic and community members were not sure of the economic performance of the mining company but claimed that they were certain that the mining firm would not be operating if they were not making a profit. To a large extent, residents also claimed that the mining firm is making huge sums of money but investing just a token on sustainability and that mining firms could do better.

They are making millions of dollars from the mining and looking at even the salaries of workers, I think they can do more than what they are doing for the communities (Community resident 3).

An academic explained,

In fact, I have not taken time to examine the financial performance of Gold Fields but I know one thing for sure; if they are still in business, it means they are most likely to be making profit. So, I think they may be doing well. (Academic)

Officials of the Environmental Protection Agency Ghana also corroborate the view of the academic. An interviewee elaborated:
I know that gold prices have affected the performance of mining firms globally and I don’t think Gold Fields is different. That notwithstanding, I don’t think they are running at a loss at the moment. (Regulator 1)

It could be that economic performance of the mining company is not communicated to the latter interviewees or they may also not be much interested in knowing the economic performance of the mining company. Table 6.3 presents an extract from Gold Fields’ financial reports for the years ended 2015 and 2014. In the year 2014 Damang Mine made a net profit of 3.4 million US dollars and this fell to a net loss of 89.3 million US dollars in 2015. This confirms management’s assertion that they are not doing well. On the other hand, it contrasts with the opinion of community residents, regulators and the academic that the firm is most likely to be making profits.

Table 6.3: Gold Fields Ghana’s financial summary of profits in US$ million

<table>
<thead>
<tr>
<th></th>
<th>Takwa</th>
<th>Damang</th>
<th>Takwa</th>
<th>Damang</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>680.7</td>
<td>194.8</td>
<td>706.7</td>
<td>224.6</td>
</tr>
<tr>
<td>Net operating profit</td>
<td>358.8</td>
<td>8.5</td>
<td>335.1</td>
<td>45.0</td>
</tr>
<tr>
<td>(Loss)/Profit for the year</td>
<td>87.5</td>
<td>(89.3)</td>
<td>83.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Net (loss)/profit margin</td>
<td>12.9%</td>
<td>(45.8%)</td>
<td>11.8%</td>
<td>15%</td>
</tr>
</tbody>
</table>

The contrasting rankings of social, environmental and economic performance by stakeholders could be because each group of stakeholders may not be aware of what goes into the others’ sustainability dimensions or may not even be interested in finding out the sustainability performance of other stakeholders’ dimensions. Thus, each of these stakeholders may be perceiving sustainability performance according to their own demands and interests (Fiedler & Kirchgeorg, 2007; Hillenbrand & Money, 2007). Hence, whilst stakeholders were ranking the
mining company down on their area of interest, good remarks were made on the interests of other stakeholders.

I conclude that indicators used by interviewees to evaluate performance vary among stakeholder groups with community development being centrally important for all stakeholders (see Table 6.3). These indicators suggest that, across stakeholder groups, the key component of what they refer to as sustainable development practice is more related to the socio-economic development of the people around the mine and some environmental dimensions. This is contrary to Essah and Andrews (2016) who found that sustainability in Ghana’s mining sector appears to be synonymous with land reclamation followed by social licence activities and that long-term community development is the least important.

With knowledge from the previous chapter on how accounting is connected to measuring sustainability performance in relation to stakeholders’ expectations (Kaur & Lodhia, 2018; Schaltegger & Wagner, 2006), the next section presents the rationales for accounting in sustainability practices of the case mining company.

6.3. Rationales for accounting in sustainable development practices at Gold Fields

In Chapter 3, I noted in my conceptual framework that accounting practices and sustainability are related (see Figure 3.1). This section presents the role of accounting in sustainable development practices of Gold Field Damang Mine. Interviewees were asked how they perceive accounting’s role in the daily sustainable development practices of Gold Fields. Interpreting the responses from most internal stakeholders, such as managers and employees, it could be inferred that accounting plays an imperative role in decisions on resource allocation for sustainability activities, as well as framing and asking critical questions.
concerning how shareholder investments are managed to generate greater societal value and meet the targeted returns to the company, resulting in a broader licence to operate. Nevertheless, these roles appear to be more for economic than for general sustainability purposes (Buhr et al., 2013), and comprise more of a management control function. External stakeholders, such as the regulators, community members and the academic, also strongly believe that accounting has a role to play in sustainability. However, interviewees could not specify such roles, implying that these roles may be invisible in sustainable development, even though they exist.

As discussed in section 4.4.3, Gold Fields allocates funds to the Community Development Foundation based on a formula of 1% on the value of gold mined plus $1 for each ounce of gold mined. Accounting helps in allocating these funds. A functional manager explained:

*Funds for community development are strictly based on a formula. Accounting helps to calculate how much will come into the Foundation and this also will determine how many projects can be done.* (Middle Manager 5)

Whilst showing the researcher a pie chart on a computer screen of how funds were allocated for community development, a functional manager explained:

*So now when I present this to the trustees and this year’s requests are being made for more health projects, it will be known that we only spent 9% of our resources on health, so it helps in decision making and the allocation of resources.* (Middle Manager 5)

Using a recent incident on-site, a lower level manager explained:

*We need money for everything: from paying the contractors to the day to day activities of the company. For instance, last month we sent all our contractors rehabilitating our disturbed lands home because the finance office advised that there was no money according to our budgets.* (Lower Manager 2)

The above responses of lower and middle managers indicate that not only is accounting pertinent to sustainable development practices (Gray, 2010; Milne, 1996), it is essential in the implementation of successful sustainable development. Sustainable development begins with
the allocation of funds. The outcome of allocated funds is then measured. These are core functions of accounting. A functional manager elaborated:

*In fact, without accounting, we can’t even start any sustainability activity.* (Middle Manager 5)

Similar to findings from previous studies, interviewees perceived that there cannot be sustainability without accounting playing a role. Sustainable development involves the allocation of resources within existing and emerging environmental and sustainability accounting frameworks (Bebbington et al. 2001; Schaltegger et al., 2013; Staniskis & Stasiskiene, 2006; Tsui, 2014). Hence accounting can be seen at the beginning and through to the achievement of sustainable development in Ghana’s mining sector.

A community resident elaborated:

*The Community Affairs has an accountant who is in charge of all money matters. By that I mean he takes care of the money of the Gold Fields Foundation.* (Community resident 3)

Even though both accounting and non-accounting managers and employees of Gold Fields appear to be aware of the role of accountants in sustainable development, stakeholders outside the organisation such as community members do not have a clear opinion as to what accounting does in sustainability.

At Gold Fields, the social report measures the impact of the company and its activities on the different stakeholder groups (Perrini & Tencati, 2006). A functional manager stated:

*Accounting helps in making analysis of whether we are getting returns from our community investment. The returns are not just financial but if we invest a million dollars into scholarships and we can’t find any of our beneficiaries working anywhere in Ghana but they are unemployed, then it’s not worth it.* (Middle Manager 5)

Thus managers measure the financial value-added and value-created distributed by the company to the different stakeholder groups (employees, financial institution, country,
community, and shareholders) not always in terms of financial returns but also as long-term benefits to these stakeholder groups.

Similar to previous findings, sustainability cost-benefit analysis uses both monetary and non-monetary indicators (Amoako et al., 2017; Perrini & Tencati, 2006). Cost-benefit analysis compares the present value of benefits and costs to evaluate a project or a policy and, in terms of ‘sustainability’, it recognises future generations’ rights in the calculation of benefits and costs (Perrini & Tencati, 2006). Gold Fields interviewees indicated accounting helps with sustainability cost-benefit analysis. The analysis comprises forms of social accounting in order to understand the economic costs and benefits related to social activities: internal costs and benefits are compared to the community development policies (Perrini & Tencati, 2006). The cost benefit analysis appears to be done by comparing total costs of projects to physical output.

Management and employees indicated that accounting contributes to monitoring and controlling sustainability cost. A cost accountant contended,

*Accounting ensures that we ascertain the cost of each activity and when the cost is deviating too much from budgeted and previous costs without any reasons, we investigate as to why, and suddenly things are going that way.* (Non-managerial employee 2)

A functional manager cited an example of a situation that could call for cost justification:

*For instance, this year a plant breaks down and causes this year’s actual budget of a department to be high. It doesn’t mean next year’s actual should also be high; it doesn’t mean next year also the machine will break down.* (Middle Manager 2)

Similarly, management and staff at the safety health environment department elaborated that accounting enables the department to use resources efficiently. A functional manager said,

*Accountants help in tracking our cost and organising ourselves better. They help us to put the money where it is supposed to go. Otherwise we may be spending the money anyhow.* (Middle Manager 4).
Similar to the opinion of his boss, an interviewee demonstrated how accounting contributes to sustainability by saying:

Accounting helps in environmental management because if monies are not well budgeted for, the whole year’s budget can be used in just three months. In that case, the department will be without money for the remaining nine months. I therefore think that it helps with environmental management in the sense that you are able to stay focussed on the things to do, the timing for the projects, and it helps you to stay within budgets for various projects. (Lower Manager 1)

Findings from this study thus corroborate evidence from extant studies that accounting facilitates monitoring of sustainability performance (Adams & McNicholas, 2007; Albelda-Pérez et al., 2007).

Another role of accounting in sustainability is the identification of cost saving potential. A functional manager explained:

Accounting helps us to know where we are over-spending which makes us determine how to reduce our cost. Example, if you’re burning more fuel, you can ask yourself questions like: what kind of fuel are you using? Is your equipment up to date? How is your maintenance culture? Are you mining deeper than you have to travel? (Middle Manager 2)

Interpreting the interviewee’s opinion, accounting information facilitates the identification of costs and possible cost savings from the sustainability management practices. This explains why extant studies claim that operating sustainably is connected to cost savings and that companies can reduce cost by avoiding sanctions which most often halt production activities (Gale, 2006, Schaltegger et al., 2012; Schaltegger et al., 2013; Rikhardsson et al., 2005).

Regulators and the academic also shared their opinions on the role that accountants could play in sustainable development practices. Even though the interviewees accepted that they have limited knowledge in the field of accounting, they all agreed that accountants have a role in corporate sustainable development practices. An official of the Environmental Protection Agency Ghana responded:
I know that accounting helps in measuring performance because you can’t measure performance without accounting for it. However, I have not much idea as to how exactly accounting can help in sustainable development. (Regulator 2)

Taking a different dimension, an academic and a senior member of the Environmental Protection Agency also claimed that accountants can influence sustainable development policies and practices. The interviewees explained:

Accountants in mining companies have key roles to play towards sustainability: They could control the release of funds for activities that could results in externalities, by just confirming environmental permits have been obtained before funds are released. Because when funds are released for illegal activities, the company may spend more money to remedy the situation if apprehended by law enforcement agencies. (Regulator 1)

Accountants could help protect the environment through company policies by encouraging funds to be put into sustainable development to avoid a situation where many cities are considered dead at the closure of a mine. (Academic)

Aside from the above-mentioned functions, accounting also enables communication of sustainability performance to various units in the organisation. Management and employees to a large extent agreed that accounting coordinates all the units at Gold Fields towards the mining company’s sustainability goals through periodic communication of sustainability cost. A cost accountant explained:

We have daily and weekly cost summary sheets that we send to all sections of the organisation in creating awareness on cost incurred so far compared to their budget (Non-managerial employee 2).

A functional manager also elaborated:

In managing budgets, we have all-in sustainable cost which is the total cost of the mine at any point in time. We meet weekly and monthly to assess how these all-in sustainability cost targets are achieved. (Middle Manager 1)

Another functional manager also explained:

Towards the all-in sustainability cost, we have several meetings where everybody needs to justify to me why their cost such as labour should be what it is. (Middle Manager 3)
The role of accounting at Gold Fields includes requiring more visible and comprehensible departmental cost figures from the individual managers at regular meetings. As outlined in section 5.4.2, this is achieved through weekly and monthly reports of costs, such as health and safety and all-in sustainability cost, which are sent to all heads and departments and also posted on the notice boards for employees (see Figure 5.7). Aside from these internal users, there are professional bodies like the GRI and regulatory bodies like the Environmental Protection Agency Ghana who are presented with monthly sustainability reports in both physical and monetary terms. On an annual basis, the parent company also publishes annual reports on Gold Fields Mining Company’s website.

From the responses of the interviewees, it can be inferred that Gold Fields incorporates accounting into daily operations. Accounting encourages internal reporting and communication by making visible the environmental costs to the entire organisation (Albelda, 2011; Schaltegger & Burritt, 2010; Schaltegger et al., 2013; Rikhardsson et al., 2005). Stakeholder engagement is now recognised in the literature as a fundamental accountability mechanism, since it mandates that companies involve stakeholders in identifying, understanding and responding to the sustainability issues and concerns and that they report, explain and be answerable to stakeholders for decisions, actions and performance (AccountAbility, 2011; Rinaldi et al., 2014).

In summary, responses from stakeholders indicate that accounting supports management in the sustainability decision making process via various techniques of sustainability cost allocation, performance measurement and business environmental analysis (ACCA, 2016). Nevertheless, external stakeholders such as regulators, community members and the academic implied that these roles are invisible in sustainable development. That is, no two stakeholders perceive the same company, the same attributes nor the same sustainable development process.
Furthermore, these roles are influenced by the motive of controlling and monitoring financial resources used in sustainable development processes of the organisation (Wilmshurst & Frost, 2001). It is evident from the internal interviewees’ responses that Gold Fields uses both physical and financial data which are extracted from the database that supports financial reports. Similar to extant studies, these data are used by management to make informed business decisions (Albelda, 2011; Schaltegger & Burritt, 2010; Schaltegger et al., 2013; Rikhardsson et al., 2005). Consistent with previous studies, at Gold Fields, sharing responsibilities for sustainable development practices facilitates better cross-functional coordination, improved environmental management control, a decrease of environmental costs, and more visibility and transparency of environmental activities carried out. Reporting on sustainability goals and ways to achieve them gradually involves staff in sustainability management and the possibility of enhancing employees’ sustainability awareness (Albelda, 2011).

6.4. **Stakeholder perceptions of accountants’ involvement in sustainability**

Managers were asked how involved accountants are in sustainable development practices at Gold Fields. There were mixed responses. Whilst the accountants perceive their involvement in sustainability to be high, other managers think otherwise. A manager indicated:

> *We pull all the reports from the departments together and validate by signing them. I’m personally not comfortable signing documents when I’m not sure of the contents. I therefore on certain occasions go down to see certain things for myself, especially when the numbers look odd. There have been a few occasions that people have been made to change a few things based on my personal verifications.* (Middle Manager 2)

While I was interviewing the Finance Manager, the Mineral Resource Manager and the Metallurgical Manager came into the Finance Manager’s office with an argument: the Metallurgical Manager said the Mineral Resource Manager should have made a contractor mine an area which he strongly believes could be more productive than where they are currently
mining. In that argument, I realised that the Finance Manager made a significant contribution to the issue at hand and agreed to visit the site in question with the Metallurgical Manager the following day. This confirmed the Finance Manager’s assertions about his involvement in the mining activities.

On the other hand, many other managers and employees from non-mining related departments perceive the work of the accountants as biased towards their accounting work. A functional manager stated:

The Accountant needs to understand how the environmental cost is generated; that is, the equipment rates, how we come by the rates and the work done to generate the cost. I think this could be done by visiting the areas we’re working to find out themselves instead of just saying that some costs are huge. They need to understand the cost and not just be sitting down and be recording these costs as and when they come. (Middle Manager 4)

Another functional manager also narrated his side of the story:

The finance office most often prioritises mining and processing oriented issues. Meanwhile sometimes the mining crew will be in the pit and will be attacked by encroachers. When that occurs, we, the security team, are those who go to the rescue of the miners. It will be impossible for mining activities to go on successfully without the presence of security. (Middle Manager 3)

Interpreting the response from the two functional managers, even though the Finance Manager seems to be interested in sustainability, there appears to be an imbalance among the dimensions of sustainability: more attention seems to be given to the economic dimensions than to other areas. The issue of not partaking in environmental initiatives seems to permeate other departments not just the finance section of the mining company.

A lower level manager complained:

People do not appreciate environmental issues and that has to do with training and top management commitment to environmental management. This is because, if a manager is not too committed to environmental issues, it trickles down to the lower level and employees’ attitude to sustainability. (Lower Manager 3)
Whilst the Finance Manager of Gold Fields is very aware of what goes on at the mining sites, the accountant for the regulators has never been to a site to witness what goes on in the four years he has served the Environmental Protection Agency Ghana. The interviewee explained:

*I wish I was able to go with them at least once to see what they do and it is something I personally feel guilty of. In fact, they keep saying that I don’t understand their work, that’s why I keep complaining about their expenditure and I feel that is because I have no practical idea of what they do.* (Regulator 3)

From the responses from the interviewees on the role of accounting and the involvement of accountants in sustainability, it could be inferred that, even though accounting is perceived to play a critical role in sustainability (Schaltegger et al., 2013; Rikhardsson et al., 2005), management accountants play little or no role within the majority of sustainability practices of the organisation (Burritt, 2004; Milne, 1996). Even the few management accountants who get involved with sustainability are more interested in the economic dimensions and participate for traditional accounting reasons such as internal control purposes or over issues that affect financial performance of the organisation (Schaltegger et al., 2010).

For accounting to contribute to sustainability, there are challenges. The next section identifies and analyses the challenges related to sustainability in Ghana’s mining sector.

### 6.5. Interpretations of sustainability and accounting challenges

As outlined in chapters 1 and 4, the mounting public concern for sustainable development has driven mining businesses to try and modify their daily operations (Fonseca et al., 2010; Wu et al., 2015), including the adoption of accounting in several roles as discussed in the previous section. That said, change is not an easy process and sustainable development practices including accountability in the mining sector come with their own challenges.

This section focusses on the challenges of sustainable development practices in Ghana’s mining sector from the perspective of Gold Fields’ management, employees, community
residents, regulators and an academic. These challenges include: tensions among the sustainability dimensions, high cost of sustainability projects, the contingent nature of sustainability cost, stakeholders’ interest in economic benefits, lack of coordination among stakeholders, pressure on infrastructure coupled with a poor maintenance culture, challenges in data collection, security challenges from employees and illegal miners, power supply fluctuations, fluctuations in gold prices, lack of logistics on the part of regulators, and exporting of unprocessed minerals.

6.5.1. Tensions among the sustainability dimensions

A major challenge perceived by the researcher was the tension between the finance department and other departments, especially non-mining departments. The finance manager sees the concept of sustainability as centred on “money” and that his job involves finding alternative courses of action at lower cost, which he thinks other heads of department are not concerned about. Consequently, as part of his job he seeks for answers on any cost he deems needs justification. He said that:

*Well, everything boils down to money irrespective of how fancy the idea of sustainability looks like. So what I keep asking is, could there be an alternative for achieving the same thing? Otherwise, if you look at the environment and the community guys, they will think this is the only approach but when it comes to the finance we do cost benefit analysis of other alternatives to achieve the same purpose.* (Middle Manager 2)

However, other senior officials and heads of department see otherwise. A lower level manager with the environmental unit perceives that sustainability is not about money as the finance manager claims. The interviewee emphasised that sustainability is not solely about reducing cost; it has more to do with reducing consumption. The interviewee elaborated:

*In sustainability principles, the cost involved is important all right, but sustainable development is not solely about the money. If I reduce my quantity, the cost will go down, so that’s the whole idea...if in capturing data for GRI, I don’t capture the usage, that’s the cost without the quantity, the data is incomplete.* (Lower Manager 2)
Another lower level manager with the environmental unit also elaborated that a major challenge of his department is budgeting. The interviewee explained,

*I think in previous times, the problem we had was first of all with the approval of the budget itself; sometimes we as the environmental specialists think that we need A, B, C to make our work more efficient, but are restricted by the budget.* (Lower Manager 1)

The interviewee further recalled:

*Some time ago we wanted to do bio-gas, instead of land fill waste but it was so difficult to get somebody who is not versed in environmental issues to understand. Rather, emphasis was placed on the financial situation of the company and the project was not approved. When your hands are tied like that, you only do what is critical. You don’t get room to do what might not be critical but necessary.* (Lower Manager 1)

An interviewee also explained that accounting is biased against his office:

*Accounting guys are troublesome as they dictate our expenditure. Once they say there is no money, it’s very difficult to convince them. They control our spending which is good but their work is at the same time a challenge to us. They should understand that it’s not only production related expenditure that must be approved.* (Middle Manager 3)

Contrary to the opinions of most other managers, a functional manager said,

*I’m aware most departments have challenges with budget allocations. It’s different with my department since there is a clear formula for allocating funds. Since the formulae are based on $1 of an ounce of gold production and 1% of profit, the major challenge is when production and gold prices come down. However, the need of communities around the mine is insatiable and that is where I face challenges in resource allocation. The pressure from the communities are just too much.* (Middle Manager 5)

Interpreting the interviewee responses, it could be inferred that whilst there is tension between the finance department and some departments and units in pursuing sustainable development, managers in charge of economic activities (mining) and community affairs to a large extent do not face that challenge. The responses from Lower Manager 1 imply that the company’s commitment to environmental sustainability does not go beyond meeting the minimum requirement and that any further cost beyond the minimum is regarded as an economic burden. Again, as indicated in section 6.2, whilst nearby communities and employees within the case mining firm put more pressure on management to meet their needs, regulators with a primary
focus on environmental sustainability may not be pushing the firm enough for management to give environmental sustainability the necessary attention.

Consistent with earlier studies (such as Epstein & Buhovac, 2010; Epstein et al., 2015; Hahn et al., 2015), at Gold Fields there seems to be a tension in integrating social, environmental and financial impacts into day-to-day management decision-making. It may be that pursuing social and environmental goals and demands results in public benefits, while financial goals boost competition for individual gains (Epstein & Buhovac, 2014). Also, financial initiatives are associated with clear, measurable, short-term indicators, whereas social and environmental measurements are mostly uncertain and long-term (Epstein et al., 2015; Epstein et al., 2010). This corroborates findings of Bebbington et al. (2014) that the management and balancing of social, environmental and economic sustainability is one of the most complex challenges facing both private and public sector organisations today, with these challenges of sustainability posing many risks to, and many opportunities for, advancing the aims and performance of organisations. Nevertheless, Mackey et al. (2007) claim that the relationship between social, environmental and economic goals, although typically characterised by short-term competition and inconsistencies, has long-term benefits.

6.5.2. High cost of sustainable development projects

Lower level managers and employees perceive sustainability cost to be high. A lower level manager remarked that the company invests a lot in sustainability but does not get direct returns from such investments. The interviewee explained,

*We don’t see gold coming from environmental management; what your money is doing is not bringing gold. Just imagine, I want to extract water and the processing fee alone is $3000. But you don’t have a choice; you have to do it because you cannot use water illegally.* (Lower Manager 3)

Another interviewee indicated that
The ISO 14001 is the engine of our environment department system and it is very expensive to keep the system. If the system tells you to employ five officers you have to, else your certificate will not be renewed on expiry. (Lower Manager 1).

An employee also pointed out that

The company spends a lot of money on environmental activities and also building community centres, schools, scholarships and other things for the communities. (Non-managerial employee 2)

A cost accountant also agreed with the opinion of previous interviewees that environment-related costs are expensive and some of them are inevitable and non-negotiable. The interviewee indicated:

For environmental project such as audits, it is regulatory; even though they are expensive we have to do it. This is because audit costs are in such a way that you can’t tell people to bring down their tender for you to choose an auditor. If EPA [Environmental Protection Agency] Ghana says okay, we’re going to do the Akoben audit, you can’t say, EPA Akoben audit is expensive. (Non-managerial employee 1)

Functional managers had different opinions on sustainability-related cost. Interviewees indicated that sustainability cost may be high, but not as expensive as the lower level managers and employees perceived. A functional manager pointed out,

The cost of environmental management to me is not expensive. However, it is possible to reject a project because some projects are expensive and also not profitable. Some of them too, you could create more problems as compared to the benefits. (Middle Manager 4)

Similar to the opinion of the functional manager, a lower level manager explained,

The charges of the Environmental Protection Agency Ghana and other regulatory bodies could be high, but to be honest with you, I think that they’re not that expensive when the benefits are compared to the cost. (Lower Manager 1)

To a large extent, residents also claimed that the mining firm is making huge sums of money but investing just a token on sustainability and that mining firms could do better.

They are making millions of dollars from the mining and looking at even the salaries of workers, I think they can do more than what they are doing for the communities (Community resident 3).

An academic explained,
The amount of money spent on sustainability may look so high to the public but to me, if they are still in business, it means they are still making a profit. (Academic)

Officials of the Environmental Protection Agency Ghana also corroborate the view of the academic. An interviewee elaborated:

*I think the mining firm is spending relatively little, as compared to their earnings, in rehabilitating the place and other sustainable development agendas. (Regulator 1)*

Thus, whilst employees and lower level managers perceive sustainability cost to be high, other stakeholders view it otherwise. It could be that employees and lower level managers have an orientation towards short-term goals and profits (Skouloudis et al., 2011). Whilst sustainability costs are short-term, they pay off in the long-run. Consequently, sustainability long-term benefits may be ignored by employees and lower level management whose goal is to maximise short-term profits (Porter, & Kramer, 2019). Contrary to the views of employees and lower managers, middle managers’ claims support the finding that social and environmental activities generate positive financial performance (Epstein et al., 2015; Margolis & Walsh, 2003). Nevertheless, the position of employees and lower level managers corroborates the conclusion of Mistry et al. (2014), that “extensive costs is the biggest obstacle for trying to achieve sustainable development” (p. 127) and that is due to the high costs of implementing ISO 14001 requirements which is only feasible for larger organisations (Sinha & Akoorie, 2010).

6.5.3. Contingent nature of sustainability cost

Another concern of management is the contingency cost associated with sustainability activities. Management explained that handling environmental issues was quite complicated as there had been a couple of unexpected incidents that specifically challenged environmental and social sustainability. A functional manager explained that there are times that contingencies occur, such as the release of acid rock drainage into the stored mined rocks, which causes additional costs for chemical treatment. The interviewee elaborated:
On the side of environment, we are dealing with material in higher ARD [acid rock drainage], so sometimes you mine the material and you store them in the storage pits and, before you could say Jack Robinson, acid is coming out of it into the environment and that needs to be treated which costs very high. (Middle Manager 2)

Whilst on a site tour, the researcher witnessed a bush fire on mining company land and was told that intruders destroy rehabilitated areas by hunting in these areas. When asked about the bush fire, an interviewee narrated a recent incident where some acres of reclaimed land caught fire. The interviewee explained:

*Here is the case where the community encroaches on rehabilitated land... whether those people were hunting or... the place is burnt and about ten to fifteen acres is gone. These are areas we have spent money to rehabilitate so that when EPA confirms it has matured, it reduces the bond we have to pay to the Ghana Government. All of a sudden it becomes an extra cost for us.* (Lower Manager 3)

Interviewees pointed out that the major challenge is securing funds to meet these contingencies. A lower level manager remarked that there are difficulties in securing funds for unexpected projects that fall outside of the budget:

*Sometimes unexpected issues may come up that need attention. For example, you planned to work only at site A this year and then in the course of the year something comes up and it becomes necessary to go to site B. There is no budget allocation for the environmental impact assessment that needs to be done there and that is a problem.* (Lower Manager 1)

Again, if I have the budget for A and B, when it comes to using that budget and I need more for A, I should have that flexibility to go and take funds from B and add it to A, as long as what will be left for B will be enough. But sometimes it’s quite difficult to get that go ahead from Finance (Lower Manager 1).

An accountant gave his opinion on managers seeking addition funding for unexpected costs:

*We understand that there could be unexpected cost, so we tell them to inform us on such issues so that we discuss the way forward but sometimes before you know they would have already incurred such unexpected cost and that is where the problem comes* (Middle Manager 2).

Thus, whilst other managers expect the finance manager to make funds available for unexpected contingencies, the finance manager also expects managers to explain the causes of such contingent costs in order to evaluate if they merit extra funding as well as whether there
are alternate courses of action. Thus, not only is the high cost of sustainability a challenge, the contingent nature of sustainability cost is also an impediment to sustainability performance of the mining sector. Whilst managers may be trying to achieve equilibrium in sustainability, these unplanned social and environmental costs compete with financial goals which are mostly well defined and are much more consistent. This evidence corroborates findings in extant literature that there are interactions among the triple bottom line elements (Elkington, 1999; Vallance, et al., 2011) and that, unless there is equilibrium, achieving sustainability may continue to be merely rhetoric. Nevertheless, one would expect that management, being aware of such contingencies, should factor them into their decision making.

6.5.4. Stakeholders’ interest in economic benefits

It has been established in Chapters 4 and 5 that mining companies in Ghana appear to be more interested in economic sustainability than the social and environmental dimensions of sustainability. Evidence in this study also indicates that other stakeholders, such as community residents, perceive gaining economic benefits as the major challenge they have with mining companies. Residents working with Gold Fields are to a certain extent satisfied with the performance of Goldfield, whilst the unemployed and even community members employed elsewhere other than in the mining sector were also keen to work in the mining sector. Interviewees commented:

Sometimes you can see they should offer certain opportunities to residents with qualification certificates but they take money from other people outside these communities and give them such positions. Most positions they give to us are laborer positions which may not earn much. With the office work, it’s not easy to get, even if you’re a resident of the nearby communities (Community resident 6).

They will bring their own people and that made the youth rise against them, leading to the change in trend. We think that, if nothing at all, the menial jobs should be given to the nearby villagers and this has changed the trend a bit (Community resident 4).
Community residents appear to be dissatisfied with the level of employment of local workers. They perceive that, if not for violent action taken by community residents in agitations about employment with the mining company, the situation would have been worse. An interviewee claimed:

*The employment situation was worse until about seven years ago when the youth here demonstrated violently with management of the mining company which involved exchange of gun fire. After that the mining firm started recruiting but even still I think it’s not enough. (Community resident 1)*

Responding to the issues raised on giving community members menial positions in the mining company, a functional manager explained:

*We have challenges with critical skills especially when the gold price increases at the world market. Unfortunately, most of the community members are not skilled to work at these critical areas. The majority are even illiterates, making it quite challenging to even train them in these areas (Middle Manager 1).*

There was evidence that community members are usually employed in mining operations in semi-skilled and lower paid positions as labourers, production, and transport categories (Tedesco et al., 2002).

The researcher asked the manager what percentage of employees represent community members. Referring to a document and making a phone call, the interviewee confirmed:

*The percentage of our employees and contractors from the catchment areas is 56% as at the last quarter. What we do is to make sure that most of the recruitment that we do comes from the communities and we route that through the Community Affairs because they have the database of prospective job seekers from the communities. It is only scarce skills that we don’t get from the communities. As such we allow them to bring from outside but then most of the skills we try to get that from the communities (Middle Manager 1).*

Even community members trained and equipped with apprenticeship skills by the mining company, like steel benders, prefer working with the mining company than being on their own. I asked two young ladies working with a financial institution as mobile bankers at Damang, and one of them said:
The natives working in the mining company are happy but those of us not working there are not. We expect the mining firm to employ more from the village but most workers are from outside. (Community resident 5)

A lower level manager, who comes from one of the catchment communities, narrated how he spent years chasing a mining job in Ghana whilst he was living in the UK. The interviewee elaborated:

I returned from the UK to chase a job in any of the mining companies but failed. I then returned to work in the UK but wasn’t satisfied. So on my second return from the UK I luckily secured this job. In the mining communities in this country, if you are not employed by any of the mines around, the society regards you as not yet employed. I therefore spent years chasing this job until I finally had a short-term contract. (Lower Manager 2)

Even though management claimed they are not aware of any regulator who has joined the mining company, a senior member at Environmental Protection Agency Ghana pointed out,

I know one guy in Takwa who joined a mining company and it’s obvious that he joined the mining company because of the money. (Regulator 1)

The interviewee further stated:

The people in the mining companies are after money. So whatever they will do to get their money they will do it. And it’s a little bit of a challenge because the people that they are dealing with, apart from the regulators, most of them are illiterate; they don’t care and they don’t really know the consequence of what they are doing. So once they get money they are comfortable with them. (Regulator 1)

The interviewee cited an example:

If people are living so close to, let’s say, a pit where there’s a mine’s waste, and we [EPA] advise [by] those residents to stay a certain distance away from the waste, they would prefer taking money from the mining company and continue staying, because ... they are not well informed on the implications of staying close to the waste. Thus, illiteracy is a big challenge. (Regulator 1)

Whilst managers think that they have embraced the concept of sustainability and are practicing it, regulators think that business is still driven by the concept of “business as usual”. As shown in chapters 3 and 4, this study confirms previous studies where sustainability concerns are only
considered in decision making and actions focussed on creating shareholder value (Bebbington, 2001; Dyllick & Muff, 2016; Fassin, 2012; Gray, 2010).

A functional manager also explained:

_They know that when they work with the mining company they can better their lives. Salaries depend on the kind of job an employee does. It may not matter the qualification of the person… the least paid is US$500 basic[monthly] which excludes allowances and overtime of 30% of basic. Also, at end of year, six months of basic is added to your salary for December._ (Middle Manager 1).

Residents also concur that:

_Most people will stop whatever job they are in for a mining job because they know that once they get the mining job they can raise enough capital for whatever project they intend to do. When you work in the mines, no matter your rank, you can achieve whatever you want to do in life._ (Community resident 2).

_Compared to other cities like Kumasi and Accra: [there] you can’t get access to a good paying job, unless you have a high certificate. But here by some little training at junior high school, one earns a good salary. If you look at the amount of money a junior high school graduate is earning by working with the mine, even if you have your MBA or lecture at a university, you can’t get that money; so it is unbelievable._ (Community resident 3).

The national daily minimum wage in Ghana as at January 2017 is GH₵ 8.8 (approximately US$2.1). Monthly minimum wage figures are calculated as the daily minimum wage times 27 days, that is GH₵237.6 (US$ 56.39). The average graduate teacher earns about GH₵2000-2500 (approximately US$ 474.66–593.33) per month. A university lecturer with a master’s degree earns a gross salary of approximately GH₵3500–4500 (US$ 830–1067) per month. As a public servant, there is no end of year bonus. Comparing the monthly minimum wage of US$ 56.39 in Ghana to the amount of US$500 as the basic salary of the least paid laborer at Gold Fields, obviously, management and community members are right in their claims that working in the mining companies is a great opportunity for a better economic life in Ghana.

Tiplady and Barclay (2008) indicate that indigenous people are severely under-represented in the Australian minerals industry workforce. Also, Taylor and Scambary (2005) demonstrate
that despite significant growth in economic activity and employment opportunities in Western Australia, indigenous communities have failed to take advantage of the region’s mining boom. Contrary to these findings, residents of communities near the Gold Fields sites are more than willing to work for the company to the extent that even those already employed in other sectors are willing to migrate into the mining sector given the opportunity. It could be that Ghana, being a developing economy, has a much higher incidence of unemployment and job-seeking, particularly in recent times (Baah-Boateng, 2013), compared to Australia, a developed country. Since unemployment is an issue anyway in emerging economies, this raises doubts about whether it is mining that really causes unemployment in mining host communities. Also, the indigenous people in Australia are a small proportion of the total population at about three percent (Korff, 2017). Hence the need for employment in the number of mining companies in Australia may not be as high as in Ghana where the number of foreigners is far below one percent (GhanaWeb, 2018).

Whist residents keep insisting that they are not given their full entitlements in employment and that they are given labourer and lower positions (Tiplady & Barclay, 2008; Tedesco et al., 2002), management thinks that they are doing their best and that some needed skills are not accessible from the locally. In this study the researcher found that although not all community members can be employed, community members are very much interested in working in the mining company. However, the zeal of the Ghanaian community to work with mining companies is due to opportunity for personal wealth accumulation and not for sustainable development and survival of the planet. In addition to the finding of Buhr et al. (2014), that companies may not be genuinely interested in sustainability, citizens appear to be indifferent, with economic welfare subjugating the need for environmental sustainability in the eyes of the Ghanaian citizen. Essah and Andrews (2016) who conducted similar studies on sustainable development practices of two mining firms in Ghana, including the case company, argue that
Among the various concerns raised by community members, unemployment was the major issue. Although gaining employment in Gold Fields is the major aim of community members in towns affected by Gold Fields mining operations, mining companies do not have the capacity to absorb all employable young men and women in a particular location (Essah & Andrews, 2016). However, community residents perceive working with a gold mining company as a “dream job”, and do not appreciate any other job avenues that may be available after being trained by the mining firm with other entrepreneurial skills. As found in previous studies, in terms of employment, it is expedient not only for the mine to hire locally, but also to assist residents to find alternative employment once extraction and mineral processing activities cease (Hilson & Murck, 2000).

6.5.5. Lack of coordination among stakeholders

Interviewees perceived communication gaps between Gold Fields and community leaders, between community leaders and community members, and between regulators and government authorities. Community leaders are querying the mining firm for not consulting them before initiating projects for their communities. Community members are blaming both the mining company and the leaders for not being transparent with them on community welfare matters. In fact, community members perceived that leaders who are supposed to intercede on behalf of their people (community members) seem to be given contracts by mining firms. Regulators on the other hand are accusing the Ghanaian citizenry and politicians for not helping much in curbing illegal mining.

Most managers and employees indicated that there are cordial relations between the mining firm and the community. A lower level manager claimed:

*We have very good relationships with the community members, because we involve them in the decision making, and they understand us.* (Lower Manager 2)
In spite of the alleged cordial relationship between the communities and the mining company, managers perceived that the communities do not yet appreciate the concept of sustainability. A functional manager vented his disappointment:

*The communities don’t understand yet the importance of sustainability. They think the mine, once it’s here, we must take care of them and everything and when you tell them, if you do that, they will suffer when the mine is shut down, they say, Yes, how do you know what will happen when you leave? Do what you can whiles you are here. How we will survive is none of your business. So it’s giving us a lot of headaches trying to explain to them* (Middle Manager 5).

Whilst managers and employees say they appreciate the essence of community engagement and claim to be practising it, members of the communities see it otherwise; they think communication from the mining company to the community members as a whole is weak. Even though there is a quarterly stakeholder meeting between the company and the communities’ leaders, it is perceived that the company initiates projects that the company managers deem appropriate for communities without much consideration of input from community members. A community leader indicated:

*We meet quarterly and they set the agenda for the meeting and most often they give a report on the performance of the company. Whatever suggestions we give on community projects are barely taken into consideration. We will be happy if we can make an input into projects that they should do for us before executing such projects, instead of them just determining projects that they should do for us whilst our immediate need lies unattended* (Community resident 1).

Another resident contended:

*As for good community relations with the mine, it is somehow bad. They hardly interact with the community members directly, unless something pops up, then through their community affairs office they may convey such information. Rather, most often it is some NGOs around that organise some forums* (Community resident 3).

Despite the claim of adoption of social sustainability as a core competence in the Ghanaian mining industry, findings from this study are consistent with those of Kemp and Owen (2013) that the industry has yet to incorporate the community relations function as part of serious business at the level of practice. Despite the community affairs department serving as a liaison
between company and communities, mining organisations are largely structured in a Western, industrial pattern and refuse to reflect or mirror the local cultural context, rather than an ethnocentric approach to engagement (Idemudia, 2014; Momin, 2013; Welker, 2012).

Community members also blamed their leaders for not being transparent to them on their relationship with the mining firm. Community members think that leaders have not been fair with them in using proceeds from mining companies to develop their communities. Community members perceive both traditional and political leaders as being self-centred and that the leaders and their relations benefit from the mining industry. A resident, expressing anger, explained:

*We cannot blame the mining company, but those who are interceding for us, like the assembly, the chief and leaders in the community, [they] do not think of our welfare. They bring people from different places and take money from them in exchange for community members’ employment opportunities with Gold Fields.* (Community resident 5)

Another resident said:

*My brother, I will speak the truth, nothing but the truth. We the residents here need help but some of the chiefs behave selfishly. So they don’t tell us the truth; they rather side with the mining officials with some of them getting contracts from the mining firm. Over here it’s only God who can help us.* (Community resident 4)

The use of expressions like “only God can help us” depicts how helpless community members feel about the possibility of their leaders contributing meaningfully to their situation (Tonkinwise, 2011). The resource curse hypothesis says that citizens of countries with natural resource abundance tend, paradoxically, to have lower rates of income growth and social well-being (Gelb, 1988; Sachs & Warner, 2001; Satti, Farooq, Loganathan & Shahbaz, 2014). However, Atkinson (2016) explain that it is not the natural resources that are to blame for this ironic situation, but, rather, the inability of governments to manage mining royalties prudently in the interests of their citizenry. Findings from this study agree with the latter and that “the appropriate public policy question is not should we or should we not promote mining in the
developing countries, but rather where should we encourage it and how can we ensure that it contributes as much as possible to economic development and poverty alleviation” (Davis & Tilton, 2005, p. 233).

Government regulatory bodies were also blaming politicians and the Ghanaian citizenry for not having the will to curb sustainability related challenges such as illegal mining. The interference of both traditional and political leaders in law enforcement and regulatory agencies was bitterly expressed by the Ghana Police Service and Environmental Protection Agency Ghana’s senior officials. Interviewees elaborated:

*There is lack of the political will and, let me say the political interference, especially with the small-scale miners or ...let me use the term ...illegal ones. You know in Ghana the problem is that if someone is arrested for doing something wrong, before you say Jack Robinson, a call will come from an authority and the next thing is the person being released.* (Regulator 1)

A senior police officer also confirmed that there have been several instances where his duty as a law enforcement agent has been compromised due to interference of leaders. The interviewee explained:

*This is a small town and almost everyone knows each other. The leaders in this area are fond of pleading on behalf of these illegal miners whenever they have issues with the police. This makes it very difficult to prosecute offenders because our system is such that we need the support of these leaders to make our work easier.* (Police 1)

Officials of Environmental Protection Agency Ghana were very worried about the manner in which communities closer to the mining company are left worse of. An interviewee stated:

*...and another thing is that, the communities are also left worse off in most of the cases. I don’t know the contract they sign with the Ghana government; the percentage that is maintained for the community development is not enough.* (Regulator 2)

Whilst managers think that they have embraced the concept of sustainability and are practicing it, regulators think that business is still driven by the concept of “business as usual” and commitment to sustainable development on the part of the Ghanaian government and citizens is questioned by regulators and law enforcement agencies. This indicates the need for
commitment on the part of the Ghanaian government. The language of sustainability in regard to Ghana’s mining sector is far more prominent within Ghanaian government strategy and policy-making than it was even a decade ago. However, consistent with extant studies, the language of sustainability seems to be merely rhetoric (Myerson & Rydin, 2014; Holden, et al., 2017). Not only are leaders in emerging economies reluctant to pursue sustainable development, they also make it challenging for regulatory bodies mandated with sustainable development agendas.

6.5.6. Pressure on infrastructure and poor maintenance culture

Evidence gathered in this study shows that community projects initiated by the mining company are not maintained. I witnessed the dilapidated condition of some infrastructural projects provided by the mining company to a community. In soliciting the views of community residents, a caretaker of a library project explained:

_I have been here for four years but have witnessed no renovation. The mining company sometimes gives us books._ (Community resident 7)

To satisfy my curiosity, I entered to see what was in the library. To my surprise, some windows and the ceiling were broken and there were only a few and old books. Upon asking the caretaker if authorities visit the place, she said:

_At times the Member of Parliament, the media and some leaders of the communities come to ask of challenges here. After they leave, that becomes the end of story._ (Community resident 7)

Similar comments were made about other community projects:

_Once they get communities facilities like the school and others the maintenance culture is left to the community. I have been here since 2008 for about 8 years now. For instance, the maintenance culture looking at this community center left for the community is pathetic._ (Community resident 3).
Nevertheless, an interviewee explained:

*What I know is sometimes they allocate some kind of royalties to chiefs in the town and they also award some kind of contract to the assemblyman. With these kinds of offers to these leaders, it is expected that they can also contribute something to the community. So if the assemblyman doesn’t maintain it, nobody will be interested. (Community resident 7)*

The mining company also puts pressure on some existing infrastructure such as roads. In collecting the data, I observed that the 29 kilometre road from the mining site to the district capital, Takwa, was terrible: about 30% sealed but with very big potholes and the rest unsealed. I decided to go beyond the mining site and was surprised to see that, even though the part of the road beyond the mining site was also unsealed, it was much better for driving on than the portion used by the mining company. I also noticed that there were several unauthorised road speed bumps mounted by the community members because mining vehicles speed. A community resident, claimed:

*The road is very bad. Instead of them fixing it, they won’t and at the same time they speed with their four wheel drives (Community resident 4).*

Besides the above effects on the infrastructure, the mining sector attracts a lot of people from inside and outside Ghana with the hope of seeking employment. This increases the population in mining towns and cities which also affects the pressure on infrastructure. For instance, during phase two of my data collection, I met a security person at the guest house where I was lodging. In a conversation with him, I gathered that he was at Damang town looking for a mining job as a driver, but since he had not yet succeeded, he had taken the security position until he gets the job. Consistent with previous studies, mining operations usually result in an influx of construction and then operational staff which stretches the capacities of local hospitals and child-care facilities, coupled with considerable impacts on housing availability and affordability for old and new residents alike (Measham & Fleming, 2014). Thus, mining communities put a strain on local social services and social infrastructure (Moffat & Zhang,
These impacts often cause several undesirable results such as tension and resentment within the local communities (Rolfe & Kinnear, 2013).

Whilst some communities are looking for the mining firm to maintain projects initiated, management of the mining company thinks that priority should be given to other communities that are yet to receive such projects. However, evidence gathered in this study indicates that there are a few projects, like pipe-borne water, that are maintained. Management explained that they have no option than to maintain these projects since they are a necessity for survival. An interviewee said:

*There are communities that have not received any water project and are also expecting us to provide them with water. So if those communities enjoying the water want us to come and repair it when it is broken down then it’s a quite difficult situation. However, water is life and you cannot expect them to survive without it* (Middle Manager 5).

However, he explained that for the mining company to expect the community to pay for water maintenance is unreasonable as residents cannot afford it. An interviewee elaborated:

*We were enjoying free water from nature and if mining activities have polluted such sources of water, it is their obligation to provide another alternative for free. Hence the company has no option than to repair them when broken down* (Community resident 7).

### 6.5.7. Challenges in data collection

There was evidence that, in collecting data on the sustainability dimensions, each department tends to be interested in their own areas of concern. An interviewee explained:

*When additional information regarding quantities and measurements are requested by other departments, it becomes a problem.* (Lower Manager 3)

Also, there have been times when community residents have encroached on rehabilitation areas of the mining companies, destroying vegetation and stealing vegetables to be tested by the mining firm even though there have been consistent warnings to the communities’ members to
stay off the mining company’s property. Management indicated that the activities of intruders affect the accuracy of data collected. A lower level manager said:

*We have informed them that because of the nature of our activities, they shouldn’t fish in the river just close to our site, but they do intrude always.*

See Figure 6.1 for prohibition sign indicating: *NO FISHING, NO DRINKING, NO SMOKING.*

![Prohibition sign on rehabilitated river](image)

**Figure 6.1: Prohibition sign on a rehabilitated river**

*(Source: photo taken by author)*

On the other hand, these restrictions posed by the mining firm on community residents could affect their social life (Lawson & Bentil, 2014; Standing & Hilson, 2013), such as swimming and fishing.

While visiting a demonstration farm at Gold Fields, I overheard the tour guides (employees) complaining that some of the vegetables had been stolen. This reminded me of the danger that could be involved, should the crops not be good for consumption, as they were yet to be tested.

On that same day we came across a bush fire on a mining site. Responding to the accusations of management, an opinion leader of the community close to the mine explained,
It’s true that there have been trespassers among the community members and that the leaders keep warning the people not to interfere in the activities in the mining areas but some won’t heed this advice (Community resident 1).

6.5.8. Security challenges from employees and illegal miners

Illegal mining, locally referred to as “galamsey”, is a challenge to community residents, regulators and mining companies in Ghana. These activities are carried out by a group of people (both native and non-native communities near the mine) without permission from the authorities. Management indicated that it is quite difficult to restrict access to mining areas as people need to access their farms through mining concessions. A functional manager narrated:

Residents of the community are also a threat as we keep chasing them day in and day out from our active mining areas as well as rehabilitated lands. There are situations where people walk through the rehabilitated area to their farm lands. That makes it quite difficult to restrict access to the mine. (Middle Manager 3)

The interviewee further explained,

If the mine is far away from the community then it is better as encroachers can easily be identified. Another issue is that people think that the mine is cheating us and they are picking gold every day. Even the employees have that perception. So if I also get something, why can’t I take it? (Middle Manager 3)

Connecting the issue of trespassing to illegal miners, another resident who is an employee elaborated:

I don’t think that anybody can go and steal anything from the mines. Apart from the police station on-site, the mining company also has security personnel and at times they bring the army around. As for the rehabilitated areas and inactive mining pits, I have heard that some people intrude on those areas on a few occasions, especially the illegal miners. (Community resident 6)

Similarly, another employee, a community leader, also acknowledged that there are times that people intrude and he thinks those intruders are illegal miners who may not necessarily be residents of the communities close to the mine. The interviewee explained,

Yes, I agree that there are times that some people do trespass on the property of the mining company. However, this place is a mining area and it attracts a whole lot of
people from Ghana and even outside Ghana. I don’t think it’s always that encroachers do come from our communities. (Community resident 1)

An official of the Environmental Protection Agency Ghana also agreed to the assertions that there have been times that his office has received reports of trespassing on mining companies’ property. He attributed much of such activities to illegal miners. The interviewee explained:

Yes, my brother, it’s true. There are a few occasions that mining companies have reported of encroachments on active mining areas and reclaimed lands and I think that has much to do with illegal miners who are very difficult to fight since they are always armed. We have made several appeals to the government to intervene but less effort has been put in place. (Regulator 2)

Giving more insight on the status of illegal mining in Ghana, a senior member of the Environmental Protection Agency Ghana indicated that the issue of illegal mining has gone beyond the capacity of his office to fight the menace. The interviewee explained,

Illegal mining falls within our mandate, but the secret is that it has now moved from social to security issue. They are armed and EPA officials are not trained to handle security issues, hence the government must step in. (Regulator 1)

An academic informed the researcher that in his opinion the Environmental Protection Agency Ghana has control over multinational but not illegal miners. He explained that illegal mining has resulted in the pollution of several water bodies in Ghana (see Figure 6.2) and that serves as a major environmental challenge in Ghana. The interviewee explained that several appeals have been made to the government by stakeholders, but it appears government is uncommitted to fighting illegal mining. The interviewee explained:

...to me, EPA has been able to control the multinational mining companies. Our major challenge as a nation is the issue of illegal mining often called galamsey. These people have polluted almost all our water bodies and destroyed our forests. I just don’t know what the government is doing in curtailing this menace. Several appeals have been made by stakeholders but it seems not to work (Academic).
The above evidence shows that mining in Ghana has contributed to the host community’s development through various social amenities and services like education, health, and employment. Nevertheless, evidence in this study indicates that the social lives of the people around the mine are still affected by the mine as there are restrictions on activities such as swimming, fishing and hunting, and hence the recreational lives of community residents are curtailed.

6.5.9. Power supply fluctuations

Although hydroelectricity is the primary source of Ghana’s power, due to increasing urbanization, economic growth and industrial activities, as well as periodic hydrological shocks, Ghana has become increasingly reliant on expensive oil and gas-based generation
power plants (Brew-Hammond & Kemausuor, 2009; Mellersh, 2015). According to Ahiataku-Togobo (2012), the existing power plants are not able to attain full generation capacity due to fuel supply constraints, as well as the uncertainty of rainfall and water inflows into the hydroelectric power facilities. Because of the limited electricity supply, the practice of load shedding, i.e., interrupting electricity supply to certain areas to balance electricity supply and demand, is common in Ghana. This has affected industrial and domestic activities, industries having to find alternate sources of power such as using electricity power generators which are expensive to fuel.

Management pointed out that power shortages are a problem affecting the budget of the mining firm. The interviewee, focussing only on the economic side of the power crisis, indicated that the power crisis in Ghana requires that they use large quantities of diesel which affects the budget of the company. The interviewee explained:

*Whenever there is rationing of power, what it means is we need to generate our own power by using diesel to power the generators. We have monster generators around to generate enough power to turn our crushers to the mill; we need to work and produce gold with or without power. So power and diesel cost is killing us.* (Middle Manager 1)

The other side is that if more diesel is consumed, more pollution is emitted into the atmosphere. This did not seem to be the focus of the manager, indicating the “business as usual” focus of management. Expressing his worry about the power crisis in Ghana, a resident explained that the presence of the mining firm has been of much help in the power crisis as there has been a constant supply of power to the mining firm which also benefits them as the communities are on the same power supply route as the mining company.

*Even though the whole nation faces a power crisis, we are lucky because of the mining company. We don’t experience frequent power outages in this area as they ensure constant supply of power* (Community resident 3).
6.5.10. Fluctuations in gold prices

On the whole, with the exception of some commodities such as cotton, tea and cocoa, global commodity prices have continued a downward trend since 2011 which has also affected extractive industries. Government policy changes also affect the operations of mining firms. This was found in the case company. Management explained:

Change in the gold price is a challenge as it affects our revenues and our budget. Secondly, change in government is also a challenge. This is because new governments may come in with new policies. They all affect my work as it affects every expenditure (Middle Manager 3).

6.5.11. Lack of resources for regulators

According to Act 490, a major function of the Environmental Protection Agency Ghana is: “To issue environmental permits and pollution abatement notices for controlling the volume, types, constituents and effects of waste discharges, emissions, deposits or other source of pollutants and of substances which are hazardous or potentially dangerous to the quality of the environment or any segment of the environment” (Act 490, Sec2f). Singh (2014) claim that government agencies such as the Environmental Protection Agency are possibly the world's foremost environmental bureaucratic organisations. An interviewee explained:

Another issue is our relationship with regulators and how to get timely feedback from them. For example, if you submit an application for a permit, you want it to go through within three months or four months ahead of time. As per the requirements of permits, that period should be enough but the regulator may be too busy with other things. You can’t push the regulator too, as they may also have genuine reasons why they cannot give the permit within the stipulated time that you want them to. (Lower Manager 1)

Thus, a major concern is delays in getting feedback from the Environmental Protection Agency on issues such as permit applications. Nevertheless, the interviewee accepted that the delay in getting feedback from regulatory bodies may not be deliberate. A senior officer at the Environmental Protection Agency Ghana confirmed the allegations:
Resources for monitoring the mining companies are not available. You know it involves sophisticated equipment to be able to monitor maybe the air quality or water quality, noise level and those things. (Regulator 1)

Another senior official elaborated:

...of course, as a public service organisation in a lower middle income economy, there are challenges which affect our work as regulators. For instance, this office was established in 1999 and for the past 18 years... if you still find me in this cubicle, then it should tell you that there are challenges logistically, and personnel wise (Regulator 2).

The shortage of technical staff is identified as a challenge for the Environmental Protection Agency Ghana. An interviewee explained:

We have currently only three programme officers for the whole district managing all industrial environmental issues with the rest being supporting staff. And even with that, one of the programme officers is currently on study leave and the other on annual leave (Regulator 2).

There are over 20 mining companies operating in Takwa District (Ghana Yellow, 2018), so obviously three programme officers are woefully insufficient for handling environmental issues related to the mining sector in the district, leaving aside other industries. As indicated earlier, regulators in developing countries lack resources, including finances, human capital, knowledge, and expertise which, has been reported to be a common barrier to sustainability implementation (Altbach, 2013; Epstein & Buhovac, 2014; Pargal & Wheeler, 1996). In fact, for effective monitoring of sustainability activities, a large amount of resources is required. However, budgets for government institutions in developing economies are often inadequate (Altbach, 2013).

6.6. Chapter summary

This chapter reported on the findings on how stakeholders perceive sustainable development performance, the roles of accounting in sustainable development practices and the challenges of sustainable development facing mining companies.
The various stakeholder groups rated the sustainability performance of the firm differently, with management and employees giving high ratings whilst community members, regulators and an academic rated it between good and bad. Stakeholders tended to rate down the case company’s sustainability performance in their areas of interest, whereas they rated the sustainable development performance in areas other than their own areas of interest higher.

Although stakeholders perceived several roles of accounting in sustainable development practices of the case mining company’s subsidiary, these perceived roles were more related to managerial control than accounting. It was realised that sustainable development practices at the case mining site were capital intensive and accountants’ participation in sustainability is overwhelmed with controlling the high sustainability cost; hence, their focus is on business as usual. Sustainability accounting at the case company serves as a supporting performance measurement, communication and accountability tool (Schaltegger & Marcus, 2006).

Despite several initiatives of the mining company towards sustainable development, a number of challenges were identified, mostly stemming from tensions among social, environmental and economic dimensions of sustainability within the case company and among the stakeholders. These tensions appear to be driven by economic interests on the part of both the case company and stakeholders. Hence, findings from this study raise doubts over the genuine interest in sustainability of stakeholders including community members, employees and even some regulators. Evidence in this thesis indicates that community projects were not sustainable as they were not well maintained due to the case mining company’s desire to initiate new projects, perhaps for reporting and other legitimating purposes.
Chapter 7: Conclusions, contributions and future research

7.1. Introduction

This chapter concludes the study by summarising the key research findings and discussing the implications for theory and practice as well as directions for future research. Sustainable development practices are important for mining firms, particularly in gaining and maintaining the social licence to operate, as sustainable development practices integrate the social, environmental and economic dimensions.

Even though many researchers in the field of sustainability accounting are motivated by a desire to see improvement in the sustainability performance of organisations (Adams & Larrinaga González, 2007), prior research on internal sustainable development practices has been rare (see, for example, Adams, 2002; Parker, 2011a): “there has been surprisingly little research into sustainability processes” (Adams & Frost, 2008, p. 289). This is attributable to the intensive qualitative methods that are necessary to gain the depth of insight needed to advance the field (Adams & Larrinaga-Gonzales, 2007).

The limited few accounting researchers who have engaged with reporting organisations (e.g., Dobbs & van Staden, 2016; Schaltegger & Burritt, 2010; Mistry et al., 2014) have mainly focussed on managerial practices and perceptions. However, accounting researchers have been called on to move beyond managerial and corporate focusses, and instead bring in other parties who have roles in sustainable development practices and reporting (Lodhia & Hess, 2014). This study considers whether and how stakeholders in the mining industry (Fassin, 2009; Mainardes et al., 2011; Parmar et al., 2010; Phillips et al., 2003) perceive that sustainability and accounting are connected. Such connections are widely theorised but may not hold, particularly if how accounting is understood (e.g., as a neutral information technology, or a practice privy to businesses) and its connection to sustainability is argued as low, even alien
(Elijido-Ten et al., 2010). Accordingly, this study adds to the extant literature on accounting and sustainable development practices a new interpretation which engages stakeholders in the mining sector as depicted in my conceptual framework in Chapter 3 (see Figure 3.1).

Given that the mining industry “is currently distrusted by many of the people it deals with day to day” (International Institute for Environment and Development, 2002, p. xiv), the researcher carefully chose the mining industry in an emerging economy, to reflect an industry that is perceived potentially as retarding advances in sustainable development, and a geographical area perceived to have many sustainability challenges (Amponsah-Tawiah, 2011; Cobbina et al., 2013). As the image of mining companies in emerging economies is often embedded in their social, environmental and economic performance (ICMM, 2012), this was an ideal research context for this thesis.

7.2. Research questions and methods

Taking an approach that does not believe in a reality that exists independent of the observer enabled the researcher to answers questions already debated in the accounting literature and beyond: who are stakeholders? (Bebbington & Larrinaga, 2014; Freeman, 1984; Mitchell et al., 1997; Stern et al., 2014), what is sustainability? (Bebbington et al., 2014, Bebbington & Gray, 2001; Milne, 1996; Gray et al., 1993); why do individuals perceive sustainability differently? (Fonseca, 2010), how do companies undertake sustainable development practices? (Buhr et al., 2013), and what is the perceived role of accounting practices in sustainable development? (Albelda, 2011; Bennett et al., 2013). The thesis research sought to answer the following six research questions:

i. Who are the stakeholders in Ghana’s mining sector?

ii. What are the epistemological interpretations of “sustainability” among these stakeholders?
iii. How does a multinational mining company’s subsidiary in Ghana operationalise sustainable development and why?

iv. What is the sustainability performance of a mining company’s subsidiary operating in Ghana?

v. What are stakeholders’ views on the role and involvement of accountants in sustainability in Ghana mining sector?

vi. What are the sustainable development challenges to Ghana’s mining sector?

To answer these questions this study used a combination of literature, theory, content analysis, exploratory studies and field study to extend prior accounting and sustainability studies. As mentioned in Chapter 1, what is theorised on sustainability may differ from practice. This thesis closes such a gap between actual sustainable development practices and theoretical perspectives, providing better insights into the underlying reasons and motivations for sustainable development practices, and providing improved knowledge of the roles that accounting practices play in sustainability.

Recognising that accounting practices in mining companies contribute to sustainability in response to stakeholder forces, both internal (proactive) and external (reactive), stakeholder theory (Cragg & Greenbaum, 2012; Bebbington & Larrinaga, 2014; Freeman, 1984; North, 2014; Xenias & Whitmarsh, 2013) was applicable to this case. This is because, due to the possibility of social sanctions and loss of legitimacy, mining companies respond to stakeholder demands (Amoako et al., 2017; de Villiers et al., 2014; Viveros, 2016). Thus, in the mining sector, the expectations of stakeholders, such as regulators and society, culminate in pressure on mining firms to operate sustainably. This study establishes that since companies are willing to be seen as good corporate citizens, pressure from communities around the mining companies’ operations as well as initiatives such as Environmental Protection Agency’s
Akoben ratings with results published publicly may contribute immensely to good sustainable development practices, even more than legal enforcement. This can be explained by stakeholder theory.

Given that this empirical study involved case study research in a multinational mining company’s subsidiary in Ghana and with some perceived stakeholders, the researcher had to identify the stakeholders. This was done initially among internal stakeholders (managers and employees) of the case mining company. Then, using personal contacts and acquaintances, the researcher was able to access other external stakeholders he identified from what managers and employees told him and from what those other stakeholders said to him. In other words, stakeholders were identified using the “snowball method”, as well as applying knowledge from the literature. To ensure maximum variation (Guest et al., 2006; Saunders et al, 2007), the selected company and its stakeholders were investigated through perusal of documentation, observation and semi-structured interviews (Creswell, 2015; Myers, 2013; Teng & Faff, 2017). In order to investigate the perception and awareness of stakeholders of sustainability, interviewees were asked to share their thoughts on sustainability. Opinions were sought from stakeholders on sustainable development practices and performance of the mining firm. Furthermore, the role of accounting in sustainable development practices was explored. Finally, challenges that affect sustainability in the mining sector were also investigated. The study utilised triangulation of theory, methods and data in order to enhance validity and reliability (Krippendorff, 2004; 2011; Robson, 1993).

7.3. Findings and contribution of the study

This section summarises the findings and implications of this study on who Ghana’s mining sector’s stakeholders are, the perceptions of the identified stakeholders on sustainability, sustainable development practices undertaken by mining firms in Ghana, motivations for
mining firms to practice sustainability, how stakeholders perceive sustainability performance of the case mining company, rationales for accounting practices in sustainable development in Ghana’s mining sector, the extent of accountants’ involvement in sustainable development practices and challenges of sustainable development practices in Ghana’s mining sector.

7.3.1. Stakeholders of Ghana’s mining sector

Who did management and employees regard as stakeholders? Evidence presented in chapter 5 is in line with one core argument of stakeholder theory: that various stakeholder groups could have conflicts of interests (Freeman & Reed, 1983). It was found that the issue of who is a stakeholder is not restricted to individuals or a certain group of people, but rather unlimited. This is similar to the claim of Mitchell et al. (1997) and Cragg and Greenbaum (2002) that the definition of a stakeholder is based on perceived moral obligations as well as a function of innumerable day-to-day managerial decisions. Thus, from the perception of who is a stakeholder in Ghana's mining sector, the researcher was able to infer moral principles on which managers’ and employees’ views about the company’s responsibilities appeared to be grounded which aligns with previous studies (Cragg & Greenbaum, 2002). Again, there is evidence that some stakeholders or individuals recognise themselves as less powerful and influential. In such situations, the weak stakeholders may come together to form a stronger stakeholder group when struggling with a more powerful stakeholder in pursuit of a common interest. In this study, an interviewee cited an instance when the Ghana government had a US$15 million contract with the Chinese to mine in the Atiwa Forest Reserve. However, when NGOs realised that it was detrimental to the environment, they formed a Coalition of Non-Governmental Organisations against Mining and petitioned the International Union for Conservation of Nature.

Contrary to the assertions that conflicts of interests in a company could incite tensions between insiders (Bøhren et al., 2012) who might lack the incentives to abstain from making self-serving
decisions at the outsiders’ expense (Bøhren et al., 2012; Jensen & Meckling, 1976; La Porta et al., 1997), evidence in this study indicates that individuals such as employees and management residing in communities close to the mine could be part of both internal and external stakeholder groups (Öberseder et al., 2013). The conclusion was that, as a mining company, Gold Fields Ghana’s operations should consider a wider variety of conflicting interests both locally and globally.

7.3.2. Stakeholders’ perceptions of sustainability

The second research question explored how stakeholders in Ghana’s mining sector perceive sustainability, which is important given the potential for differences in interpretations of sustainable development. Linnenluecke and Griffiths (2010) have assumed that different organisational culture types influence how employees understand and enact corporate sustainability. This study establishes that even within the same organisation and stakeholder groups who are expected to experience the same institutional culture, including people controlling the organisation, there are variations in how sustainability is perceived and that various stakeholders in the same industry have different perceptions about what sustainability is all about. This is in line with findings in the extant literature that sustainability lacks a widely accepted operational definition and framework (Bell & Morse, 1999; Holden et al., 2013; Solow, 1992) and that sustainability has been used in various contexts to mean different things to different people as the term keeps being “moulded” (Bebbington, 2001, p. 128).

Again, even though interviewees’ perceptions of sustainability resonate with World Commission on Environment and Development’s broad definition which integrates social, environmental and economic issues, the opinion of managers that the dimensions are disjointed and more skewed towards economic sustainability indicates how the broad definition appears challenging for organisations to operationalise. Considering the various opinions of
stakeholders, it can be implied that organisations find it challenging to comprehend how effectively they can balance corporate responsibilities between diverse stakeholders (Hart, 1995; Starik & Rands, 1995). This also suggests that the concept of sustainability is a social construct and is similar to earlier findings that suggest that sustainability is subjective and defined differently (Fonseca, 2010; Montiel & Delgado-Ceballos, 2014; Nikolaou & Evangelinos, 2008). The diversity of the stakeholders' perceptions can be problematic and add challenges to the process of working through issues. Nevertheless, it can also breed tension that drives organisations and society at large to greater levels of sustainability (Hahn et al., 2015).

Similar to previous studies (e.g., Dubiński, 2013; Gilberthorpe & Hilson, 2016; Vintró et al., 2014), there is a relationship between the sustainable development dimensions and the need to ensure equilibrium, as issues affecting environmental aspects could have implications the economic and social dimensions and vice versa.

Interestingly, sustainability at the case mining company was linked to spirituality, recreation, food safety and nutritional security of communities close to the mine (see Tables 7.1 and 7.2). Even though some authors (e.g., Carroll, 2012; Núñez Madrazo, 2011) connect sustainability to spirituality and food and nutrition to sustainability (e.g., Benn, Edwards & Williams, 2014; Dyllick & Hockerts, 2002) theoretically, this study is among the first to empirically discover how the operations of companies, particularly the mining sector, could affect the spiritual and recreational lives as well as food and nutritional security of communities.

7.3.3. Sustainable development practices at Gold Fields Damang Mine

As discussed in chapter 5, the departments responsible for the economic elements of sustainability dominate those focussing on either or both social and environmental elements. Even though these departments are interrelated in ensuring sustainability, there seems to be no equilibrium among the dimensions. For instance, six departments solely and one partly focus
on economic sustainability, three departments can be linked to the social dimension, and one department focusses on performing environmental responsibilities (see Table 5.2). Managers also indicated that economic activities are given more attention than social and environmental sustainability. Comparing social and environmental, from interviewees' responses, it appears more attention is given to social dimensions of the daily operations of the mining company even though environmental key performance indicators exist at all levels. Recent studies have concluded that in mining firms whose sustainability covers the triple bottom line, economic interests dominate corporate sustainability (Cisneros & Christel, 2014; Falck & Spangenberg, 2014). The sustainable development practices at the case mining company and the roles of accounting are influenced by the business-as-usual concept (Wilmshurst & Frost, 2001). Also, even though the popular knowledge is that reclamation can restore scarred land to its former state (Cao, 2007), evidence from this study corroborates that post-mining reclamation can only lead to a partial restoration of biodiversity (Essah & Andrews, 2016; Gould, 2011).

Whilst the role of managers in the mining firm focussed mainly on the economic dimension of the triple bottom line, regulators, employees, community members, and an academic emphasised the two other dimensions of the triple bottom line: the social and the environmental. The responses from employees, community members and regulators were not surprising as traditionally sustainability has focussed on social and environmental dimensions. Also, regulators, employees and lower level managers may not be held accountable for financial dimensions of sustainability; hence less attention is given to the economic dimensions by employees. The diversity of perceptions found in this study is reflective of stakeholders realising a growing need to engage with sustainability, but with quite a disjointed point of reference in terms of issues to be managed.
Previous studies indicate that having a sustainability policy is a foundation for any organisation to establish sustainable development practices (Arimura et al., 2008; Epstein & Buhovac, 2014; Granly & Welo, 2014). The sustainability policy provides a framework for the organisation to monitor and improve their environmental impact (Granly & Welo, 2014). The International Council on Mining and Metals has described the central role of a written policy in their technical brief on sustainability. Membership of ICMM requires a commitment to ICMM’s 10 Principles incorporated in the framework for sustainable development in the mining and metals industry (ICMM, 2015). This study found that Gold Fields Limited as a parent company has formal written sustainability policies in place and the contents of these policies are consistent with the 10 principles of ICMM. This is evidence of stakeholder pressure on Gold Fields to adopt certain policies on sustainable development.

At Gold Fields Limited, the Environment and Health & Safety units have subscribed to international sustainability standards: ISO 14001 and OHSAS 18001 respectively. Nevertheless, there are other standards that could be employed to manage dimensions and social responsibility such as ISO 26000 (Arimura et al., 2008). Escanciano and Iglesias-Rodríguez (2012) point out that mining companies with more than one international quality standard ensure total quality management. Gold Fields Limited also subscribes to the GRI guidelines which facilitate business organisations, through voluntary guidance, in reporting on their sustainable development practices (Gold Fields Limited, 2016, 2017b). Consistent with findings from other studies, to ensure greater transparency, corporate responsibility, stakeholder accountability transparency, veracity and usefulness in data reported (Buhr et al., 2014; Milne & Gray, 2007), Gold Fields Limited subscribes to more than one international and country-specific standard.
The third research question further examined factors that motivate mining firms in Ghana to practise sustainable development from stakeholders’ perspectives. On the motivations for sustainable development practices, interviewees mentioned a range of factors that are both proactive and reactive. Management and employees outlined proactive motivations such as the protection of the corporate image, cost savings intentions, development and maintenance of a cordial relationship between the mining company and communities and protecting future generations’ interests (Buhr et al., 2013; Hahn & Scheermesser, 2006; Gürhan-Canli & Batra, 2004; Morioka & Carvalho, 2016; Vries et al., 2015). Reactive motivations mentioned by management and employees also including regulations, parent company’s requirements and professional association requirements. Regulators, the academic and community members also indicated that mining companies are forced to act sustainably. Reactive motivations outlined by the latter interviewees included pressure from the communities near the mines and society at large encouraging the mining firm to operate sustainably. They claimed that without this pressure the mining company would have acted otherwise. This corroborates earlier findings and claims that voluntary, market-driven and stakeholder-led drivers have implications for sustainable development practices of mining firms (Amoako et al., 2017; Fonseca, 2010; Buhr et al., 2013; Fonseca, 2010).

Even though managers indicated that Porter and Kramer’s (2011) concept of shared value, which is understood as creating economic value in a way that concurrently creates value for society by addressing its needs and challenges, is claimed to have reinforced the idea that ‘good’ business can contribute to sustainability (Arjaliès & Mundy, 2013). Findings from this study are similar to other observers who perceive companies as exploiting sustainability issues exclusively for the purposes of increasing shareholder wealth, with little or no genuine connection to sustainable development (Gray, 2010; Milne et al., 2006). For instance, there was evidence that the case mining company chooses to maintain existing projects when there
is pressure from communities, and when the company also benefits from renovating or initiating the project in question. Thus, similar to previous studies, the case mining company manages its sustainability performance for a range of different reasons all primarily stemming from a business case rather than a moral stance (Adams & Frost, 2008).

Whilst Möhr-Swart (2008) concludes that the mining companies used in his study did not show significant cost savings after the implementation of environmental management systems, other studies (such as Gale, 2006; Schaltegger et al., 2012; Rikhardsson et al., 2005; Schaltegger et al., 2013) found that operating sustainably is connected to cost savings. Findings from this study corroborate the latter findings that avoiding sanctions which most often halt production activities, reduces environmental pollution cost. Interestingly, accounting employees and managers of the mining company are aware of the cost savings benefits associated with voluntary sustainable development practices. Nevertheless, reactive factors dominate the motivations for sustainable development practices of the case mining firm.

7.3.4. How stakeholders perceive sustainability performance of Gold Fields

Research question four elicited answers from stakeholders on how they perceive sustainability performance of the mining company. The evidence presented in chapter 5 implies that employees to a great extent are proud of the firm’s sustainability performance and of working for the mining company. Interviewees praised the company’s focus on employee welfare, especially with high remuneration, community development and good health and safety practices, and hence ranked the firm’s sustainability performance as good-very good (as presented in chapter 6). Nevertheless, whilst the Environmental Protection Agency Ghana and the management of Gold Fields ranked Gold Fields’ social dimensions of sustainability as gold-excellent, the community members’ responses to a large extent indicate that Gold Fields’ performance ranges from good down to unsatisfactory. Community residents’ criticisms are
mainly of the mining company’s failure to employ more indigenes of communities in their catchment areas. The latter criticism suggests that the company may not be adhering to its corporate social responsibility practices or investing enough resources into these activities (Lawson & Bentil, 2014), even though the regulatory bodies and employees see them as doing well. Again, whilst regulators perceive social sustainability as “just doing well”, community members do not see it as such; rather they see the social dimension as a requirement of mining companies. The contrast in the ratings of the Environmental Protection Agency Ghana, employees and management with those of community residents corroborates the criticisms of how the social dimension, in particular, is methodically measured (Norman & MacDonald, 2004; Robins, 2006) and the challenges of quantification of social performance itself (Essah & Andrews, 2016).

In spite of the fact that there are no specific regulations on social dimensions of sustainability as compared to environmental dimensions in Ghana, social performance assessment by regulators indicates that mining firms’ social performance is better than their environmental performance. The better performance in social sustainability was related to pressure exerted by communities around the mine to fulfil their social responsibilities. This implies that making laws per se may not be enough for better sustainability performance, but rather stakeholder pressure on mining firms to act sustainably may work better than laws that are not enforced. This evidence supports recent findings that mining firms are not willing to do much in terms of abiding by these regulations unless society ensures that these laws are enforced (Essah & Andrews, 2016). Consistent with extant studies, the Ghanaian mining industry has had a history of causing discontent among Ghanaian citizens even though the initial perception of the industry was positive due to potential benefits to the community (Lawson & Bentil, 2014; Standing & Hilson, 2013).
The Environmental Protection Agency Ghana ranked the environmental performance of the mining company as red-blue (poor-good). This poor-good grade was attributed to the technical nature of environmental issues as compared to the social dimensions, which were perceived by Environmental Protection Agency officials as philanthropic and non-technical. This evidence supports previous studies that found that environmental issues are often perceived to be technical and that many people who should participate in these endeavours tend to be unwilling, unable or entirely excluded from the negotiation process (Appiah-Opoku, 2001; Bawole, 2013). On the other hand, the community members, employees and managers ranked the mining firm’s environmental performance as between good and very good, and Environmental Protection Agency Ghana officials conceded that the mining company has made an improvement in their environmental management in recent years.

Although community leaders had a fair idea of the economic issues of the mining company due to interactions at quarterly stakeholder meetings, regulators, the academic and community members did not have much idea of the economic performance of the mining company. It could be that economic performance of the mining company is not communicated directly to them and that they may also not be much interested in knowing the economic performance of the mining company, even though the financial performance of the mining company is published in annual reports which are available online on the parent company’s website.

7.3.5. The role and involvement of accountants in sustainable development practices

The fifth research question explored the role of accounting as perceived by interviewees. The results show that the mining company does not use environmental accounting systems even though the departments designated for “sustainability” apply accounting techniques like budgetary controls, total quality management and cost analysis. Findings from this study
indicate that, not only is the role of accounting relevant to sustainable development practices (Gray, 2010; Tsui, 2014; Milne, 1996; Schaltegger et al., 2013), it is inevitable in the implementation of successful corporate sustainability. External stakeholders such as the regulators, community members and the academic also strongly believe that accounting has a role to play in sustainability. However, interviewees could not specify such roles, implying that these roles may be invisible in sustainable development, even though they exist.

At the case mining company, sustainable development practices commence with funds which are primarily allocated by accounting functions for sustainability activities and the outcomes of the allocated funds are also measured. Evidence provided in this study indicates that there cannot be sustainable development practices by organisations without accounting and that accounting can be seen from the beginning through to the end of sustainability in Ghana's mining sector. Nevertheless, the perceived roles of accounting elaborated by stakeholders, which are summarised below, comprise management controls rather than traditional accounting functions of recording and reporting of economic transactions.

Cost-benefit analysis compares the present values of benefits and costs to evaluate a project or a policy. In terms of sustainability, it recognises future generations’ rights in the calculation of benefits and costs (Perrini & Tencati, 2006). This research has provided evidence which reinforces that accounting facilitates sustainability cost-benefit analysis. Managers measure the financial value added and value created distributed by the company to the different stakeholder groups (employees, financial institution, country, community, and shareholders), not always in terms of financial returns but also in long-term benefits to these stakeholder groups.

As outlined in section 5.4, accounting encourages the communication of sustainability performance among departments and units of the case company. This is achieved through weekly, monthly, quarterly and annual reports such as health and safety and all-in sustainability
costs which are sent to all heads of units and departments and also posted on the notice boards for employees. Aside from these internal users, there are professional bodies like the GRI and regulatory bodies like the Environmental Protection Agency Ghana which are presented monthly with sustainability reports which are both in physical and monetary forms. On an annual basis, the parent company also publishes reports on Gold Fields Mining Company’s website (Gold Fields Limited, 2017a). This evidence is similar to findings of previous studies that stakeholder engagement is now recognised as a fundamental accountability mechanism, since it mandates companies to involve stakeholders in identifying, understanding and responding to sustainability issues and concerns and to report, explain and be answerable to stakeholders for decisions, actions and performance (AccountAbility, 2011; Rinaldi et al., 2014; Adams & McNicholas, 2007; Albelda-Pérez et al., 2007).

Prior studies indicate that operating sustainably is connected to cost savings and that companies can reduce cost by avoiding sanctions (Gale, 2006; Rikhardsson et al., 2005; Schaltegger et al., 2012; Schaltegger et al., 2013). Consistent with these studies, the finance manager indicated how accounting, when it identifies a cost increase such as of fuel, informs the mining company that they might be digging too deep or using low-quality fuel. Thus, accounting information facilitates the identification of costs and possible cost savings from the sustainable development management practices.

There is evidence that accounting uses budgets of all departments to help in sharing organisational commitment to widening sustainable development responsibility and awareness among employees and managers (Albelda, 2011). Interviewees explained that, periodically, all-in sustainability cost reports are sent to all departments and discussed in meetings. Thus, accounting helps to integrate sustainability issues into daily operations, and encourages communication among departments.
The fifth research question further assesses the perceived involvement of accountants in sustainable development practices of the mining company. In this study, managers and employees other than those in the finance department elaborated that accountants in the mining company do not actively participate in environmental sustainability, but rather in economic sustainability. As previous studies have indicated, accountants’ involvement in environmental sustainability is scarce (Bebbington et al., 1994; Deegan 2002; Parker, 2000; Wilmshurst & Frost, 2001). In this study, in the presence of the researcher, the finance manager expressed willingness to visit a mining site with the metallurgist, which indicates his active participation in mining activities. However, the environmental team complained of the absence of accountants on their operational sites and that in spite of accountants’ not visiting environmental operational sites, they kept raising queries about high environmental cost. Also, an accountant for the Environmental Protection Agency Ghana regional office admitted that he had never been on a site trip with the environmental officers. Extant studies mention that accountants manage capital and operating expenditures for sustainability (Adams & Harte, 2000), as accounting practices are still guided by the underlying values of economic prosperity (Ball, 2005; Albelda, 2011). Therefore, although changes in organisational routines and responsibilities are evident, as well as changes in the use of accounting systems, (Bebbington, 2007), the implementation of some mechanisms for environmental accounting and reporting might only imply an attempt to negotiate and control the environmental agenda, rather than mean any change in managerial attitudes and priorities (Owen, 2008).

7.3.6. Sustainable development and accounting practices challenges

As indicated earlier, in chapter 6, there is a relationship between the dimensions of sustainability at Gold Fields. Interviewees indicated a range of challenges they face in regard to sustainability which are discussed below.
First, in spite of the interrelationships, the main dimension of sustainability focussed on, whether economic, social or environmental, appears to influence the way each stakeholder makes decisions, and there are tensions among the social, environmental and economic interests in sustainability decision making. The findings suggest that there is no equilibrium, as the economic dimension appears to be given the highest priority, followed by the social dimension, with little emphasis on the environmental. Consistent with previous studies, at Gold Fields there seems to be a tension in integrating social, environmental and financial impacts into day-to-day management decision-making (Epstein & Buhovac, 2010; Hahn et al., 2014). Regulators also appear to pay no attention to economic sustainability. Rather, much emphasis is placed on the environmental dimension and relatively less to social sustainability, whilst community members showed the most interest in social dimensions, followed by environmental sustainability.

Second, within Gold Fields, employees and lower level managers perceive sustainability cost to be expensive, but middle-level management, regulators, the academic and community members think that costs of sustainability activities may be high but not too expensive, as the long-term benefits outweigh the short-term cost. The position of employees and managers corroborates Mistry et al.’s (2014, p. 127) conclusion that “extensive costs is the big obstacle for trying to achieve sustainable development” and that due to the high cost of implementing ISO 14001 requirements, the programme is only feasible for larger organisations (Sinha & Akoorie, 2010). The difference in opinions could be because lower level managers and employees have an orientation towards short-term goals and profits (Skouloudis et al., 2011), as sustainability costs are high and short-term, but the pay-offs are only in the long-run. Consequently, a functional manager who is responsible for the long-term performance of the mining company may have a better understanding of the sustainability investment returns to the mining company.
Third, another challenge in sustainability and accounting in Ghana's mining sector has to do with data collection. Participants indicated that in collecting data on the sustainability dimensions, each department tends to be interested only in their own area. Also, intruders and theft interfere with data collection. Furthermore, there is evidence that employees and community members may illegally harvest crops from demonstration farms which are yet to be tested as good for consumption. Community members also hunt in rehabilitated areas sometimes causing fire outbreaks. These findings support those of prior studies that doubt the accuracy of sustainability disclosures (Buhr et al., 2014; Chapman & Milne 2004; Cho et al., 2012; Deegan & Rankin, 1997; Font et al., 2012; Lodhia, 2014; Milne & Gray, 2013; Morhardt, 2010; Milne & Gray, 2013). Also, there is a high cost associated with data collection. Department representatives report on events in other departments relating to their own departments, thus doubling up on reporting. Also, the cost of data collection equipment, such as a fully furnished laboratory on-site, increases the cost of data collection.

Fourth, evidence in this study indicates that many sustainability costs, such as the spillage of acid rock drainage and the disturbance of reclaimed lands by intruders, are events outside the company’s control. Management is not only concerned about the high cost of sustainability, but they explained that the contingent nature of sustainability also comes with additional cost. The costs could be social or environmental and may conflict with financial goals. While managers may be trying to achieve equilibrium in sustainability, these unplanned social and environmental costs compete with financial goals which are mostly well defined and are much more consistent (Hägerstrand, 1989, 1999; Vallance et al., 2011). Thus, unless there is equilibrium, achieving sustainability may continue to be merely rhetoric. Nevertheless, one would expect management to factor such contingencies into their decision making.
Fifth, most community members and employees agree that financial considerations are the main reason why they prefer working with the mining firms. This study points out that the Ghanaian community is eager to work with mining companies even though they may be aware of the environmental sensitivity of the industry’s activity. Agergaard et al. (2009) claim that Gold Fields has contributed towards employment in its communities, but Essah and Andrews (2016) indicate that this is not enough as residents continually complain about the lack of jobs in the area, especially jobs with the mining companies. Evidence in this thesis shows that even some regulators and those gainfully employed outside the mining sector, are willing to forgo their current jobs for mining jobs due to the huge economic benefits in mining jobs (more than 10 times the national minimum wage). Previous studies (such as Buhr et al., 2014; Deegan & Rankin, 1997; Font, 2017; Lodhia, 2014; Font et al., 2012) claim that companies may not be genuinely interested in sustainability. However, findings from this study show that it is not only companies who may not be interested in sustainability, but also certain stakeholders such as the community and even regulators.

Sixth, an interesting finding of this study is the perceived communication gaps between Gold Fields and community leaders, between community leaders and community members, and between regulators and government authorities. While leaders of the communities are criticising the mining firm for not consulting them on projects it initiates in the community, community members were blaming both the mining company and the leaders for not being transparent with them on community welfare matters. Regulators also expressed worry about the unwillingness of citizenry and politicians to help in the fight against illegal mining. Perceptions could lead to allegations based on fragile and potentially extraneous evidence; human and organisational behaviours have all been found to be influenced by how actors perceive their worlds (Ajzen, 1991; Buchanan & Huczynski, 2004). Although such perceptions may not be based on facts, these cannot be ignored. Findings from this study indicate that
stakeholders do not appear to have much trust in each other and that fulfilling their responsibility towards sustainability is seen as merely rhetoric (Esau & Malone, 2013; Dias, 2010) due to lack of coordination among stakeholders. This thesis argues that until there is coordination among stakeholders, particularly, in developing countries, claims of progress toward sustainability may continue to remain rhetoric.

Seven, findings from this study reveal that a large proportion of sustainable development projects undertaken by mining firms for the community are not well maintained and that mining firms prefer initiating new projects rather than maintenance and continuance. It could be that, because of the environmental sensitivity of mining activities, mining firms initiate new projects annually for legitimacy and reporting purposes instead of sustaining existing ones. Some of the findings of this study are consistent with extant literature that mining operations put pressure on social amenities (Greer et al., 2010; Haslam McKenzie et al., 2009; Measham & Fleming, 2013) which often irritates community residents (Greer et al., 2011). However, bad maintenance practices challenge the concept of sustainability as adequate maintenance plans are prerequisites for sustainable infrastructure. Nevertheless, these findings were not surprising as developing nations have challenges related to inadequate infrastructure development and a poor maintenance culture (Kozma & Vota, 2013; Ondiege, Moyo & Verdier-Chouchane, 2013). Without adequate maintenance, infrastructure deteriorates quickly and is unsustainable. Notwithstanding this, there were a few projects, like the provision of potable water, that communities had pressured management to maintain, since it was perceived as lifesaving. The 29 kilometre road from Takwa, the biggest city in the area, to the mining site was also being renovated. This was reported in the 2016 integrated annual report to be of benefit to both the mining company and the communities (i.e., of shared value). Hence, there is evidence that unless there is societal pressure or perceived benefit for companies from sustainable development practices (Buhr et al., 2013), companies may not be willing to maintain existing
projects. Rather they may continue to initiate new projects so as to boost their reporting and thus gaining legitimacy.

Eight, regulators also had several administrative and operational challenges. Administratively, even though the regional office of the Environmental Protection Agency visited by the researcher appeared to have enough office space, the district office had limited accommodation: there were two rooms, one for the district director and the other for five other staff. The district office oversees over 20 mining companies. There were three programme officers to manage the district with one on study leave. As found in previous studies about implementing sustainable development legislation, regulators in developing countries lack resources including finances, human capital, knowledge, and expertise (Epstein, 2018; Pargal & Wheeler, 1996). Thus, budgets for government institutions in developing economies are often woefully inadequate (Brandful, 2013). It is therefore not surprising that regulatory bodies in Ghana are struggling to deal with sustainability-related challenges in the mining sector.

Some interviewees were also worried that raw materials extracted are sent outside Ghana at a cheaper cost, refined, and brought back to be sold at a higher cost. Therefore, some stakeholders, such as the academic and a regulator, suggested that a refinery be set up in Ghana to process the minerals before being exported. The recent fall in gold prices was also an issue raised by management and community members as affecting their returns, and a reason for slow growth in community development projects.

Finally, power shortage problems affect the budget of the mining firm. An interviewee focussing only on the economic side of the power, indicated that the power crisis at times in Ghana requires that they use large quantities of diesel which affects their cost. From an environmental view, when more diesel is consumed, more pollutants are emitted into the
atmosphere. However, this did not seem to be the focus of the manager indicating the business-as-usual orientation of management.

7.4. Contributions and implications

In this section, I draw on the empirical evidence of this study to elaborate my contributions to knowledge. This study has both theoretical implications for sustainability and accounting research and practical implications for Gold Fields’ sustainable development practices.

7.4.1. Theoretical

This study investigates sustainable development practices, sustainability performance, related challenges and the perceived role of accounting. It contributes to the stakeholder identification literature by establishing that employees and management have similar opinions on sustainability practices, sustainability performance and related challenges. In contrast, evidence in this study shows that external stakeholders’ (beneficiaries’ and regulators’) perceptions of sustainable development practices and sustainability performance differ from those of managers and employees (initiators).

The present study has contributed to the scant literature on social accounting, especially in the context of developing economy settings. Sustainability disclosures are mostly voluntary and therefore sustainability accounting literature has focussed much attention on the reasons why companies disclose, using stakeholder theory (e.g., Cooper & Owen, 2007; Deegan, 2002; Hahn & Kühnen, 2013; Manetti, 2011; Perrini & Tencati, 2006). In these prior studies, the attention is on the content of sustainability reports. This study expands previous accounting research (e.g. Schaltegger et al., 2018), by applying stakeholder theory in the field where accounting and sustainability are being practised.
This contributes to the literature by answering the calls for more research relating to demands for dynamism in sustainability matters (such as Ball & Craig, 2010; Larrinaga & Bebbington, 2001; Momin & Parker, 2013) especially in an environmentally sensitive industry like mining. This thesis contributes to the sustainability literature by demonstrating how fluid sustainability is: in the case mining company, sustainability is linked to spirituality, recreation, food safety and nutritional security of communities close to the mine (see Tables 7.1 and 7.2). Even though such claims may be theorised, this thesis provides empirics that identify new elements that falls within the social dimension of sustainability.

Accounting researchers (e.g., Dobbs & Staden, 2016; Schaltegger & Burritt, 2010; Mistry et al., 2014; Momin, 2013) have mainly focussed on managerial practices and perceptions. Meanwhile, the concept of sustainability is influenced by a wider range of stakeholders. Therefore, this study is in response to researchers’ call for further studies to understand how these stakeholders (such as regulators, and community members) influence sustainability-related practices in the mining sector (e.g., Amoako et al., 2017; de Villiers & Alexander, 2014). By understanding the perception of stakeholders in the mining sector and how they influence sustainable development practices within Ghana, this study contributes to the literature on sustainability by showing how the concept of sustainability is a social construct within a developing country’s context.

Lastly, this findings in the pilot studies will also enable stakeholders to comprehend the different contexts in which corporate websites can be used for sustainability disclosures and inform them of possible obstructions to effective practice.

7.4.2. Methods

Most social accounting scholars’ inquiries about the outcomes of initiatives are still focussed on data description, quality of reports and identification of trends (Amoako et al., 2017; de
Klerk & de Villiers, 2012; Boiral & Henri, 2017; de Villiers et al., 2014; Diouf & Boiral, 2017; Jenkins, 2004; Jenkins & Yakovleva, 2006; Szczepankiewicz & Mučko, 2016), thus reflecting early work on these matters (e.g., Beets & Souther, 1999; Belkaoui, 1976; Choi, 1998; Deegan 1999; Gray & Bebbington, 2000; Guthrie & Parker, 1989; Mathews, 2001; Milne, 1996; Parker, 1998). While these works have helped sustainable development initiatives among companies, they indicate the potential for further studies using a qualitative approach to examine what is being practised. This study thus contributes to the existing sustainable development and accounting research methods as it is a qualitative study of social accounting that sought both managerial and non-perspectives, in a developing country context.

The two pilot studies explored the contents of sustainability reporting on corporate websites. Extant studies on sustainability reporting have focused mainly on comparisons between sustainability reports published by different corporations or sustainability reports published in different years by the same corporation (Adams and Frost, 2004; Lodhia, 2010, 2012b). The pilot studies are believed to be among the first studies to examine differences in sustainability information published on different subsidiaries websites within the same large corporation and the first to show how concurrent disclosures can differ.

7.4.3. Practical

This research identifies stakeholders of Ghana's mining sector and explores their perceptions of the meaning of sustainability, how the case mining firm is performing and challenges of sustainable development that Ghana's mining sector faces. Significant gaps perceived by various stakeholders may point to the failing of corporate organisations to achieve sustainable development. This could have additional benefits such as increasing stakeholder engagement in assessment and reporting initiatives as well as a feedback effect of nurturing awareness (Mascarenhas, Nunes & Ramos, 2014; Momin, 2013).
For accounting practitioners, the findings of this research may assist them by providing an in-depth understanding of the existing perceptions of stakeholders on accountants’ roles and involvement in sustainable development. This research is beneficial to both accounting and non-accounting managers as well as corporations which intend to engage their stakeholders in their sustainability practices via accounting as it enables an understanding of various stakeholders’ perceptions on how accounting is perceived to be connected to sustainability and the difficulties and challenges to sustainable development practices.

The pilot studies also can benefit future practice by providing an understanding of the factors affecting the use of corporate subsidiaries’ websites for sustainability disclosures in a socially and environmentally sensitive industry such as mining. This can provide practitioners with an appreciation of the factors that motivate web-based sustainability disclosures as well as benefit companies which are practicing or intending to undertake such sustainability disclosures. The pilot studies also enable stakeholders to comprehend the different contexts in which corporate websites can be used for sustainability disclosures and inform them of possible obstructions to effective practice.

7.4.4. Policy

Findings from this thesis are in response to recent calls for policy-focussed research and action on sustainable development (Ball et al., 2014; Bebbington & Larrinaga, 2014; UN, 2012). This thesis shows that there are formal legal frameworks in the mining sector and that formal and informal institutional environments, particularly the legal system and society at large in Ghana, do influence sustainability development in the mining sector (Omayra Bermúdez-Lugo, 2016). Nevertheless, the major challenge is with the political will of the government of Ghana to enforce these laws, especially on illegal mining. That is, there is a need for the government to reform and enforce the legal system to enhance its capacity for resolving sustainability
development challenges in the mining sector. The evidence from the pilot studies shows quite a small extent of sustainability disclosure (Amoako et al., 2014; 2017), which implies that regulators may need to provide incentives for more detailed sustainability reporting.

This case study highlights the advantages of integrating accounting with sustainable development practices from the perspectives of various stakeholders. As such, findings from this thesis seek to improve sustainability practice, since engagement with practice is required in order to effect change towards sustainability (Epstein & Buhovac, 2014; Parker, 2005; Adams & Larrinaga, 2007) and to gain new insights regarding sustainability (Gray & Laughlin, 2012).

Policy-wise, the pilot studies also can benefit future policy formulation as it provides professional bodies, industry associations, as well as regulators, possible motivations for sustainability disclosures which can strengthen the roles of policy makers in enabling the use of the corporate websites for effective sustainability disclosures.

Lastly, the results of this study may also be of significance to institutions of higher learning. Including sustainability accounting as a core accounting subject could be explored. At present, accounting students are not exposed to sustainability in accounting studies in many universities and colleges, particularly, in developing countries. The lack of focus on sustainability in accounting subjects offered by the professional accounting bodies, universities and colleges has been highlighted in recent publications (such as Deegan 2013; Zulkifli, 2012). Deegan (2013) recommends that, to ensure a more active role of accountants in accounting for sustainability, such a role should be first nurtured in accounting students, by equipping them with the required knowledge which can be practiced when they enter the working environment.
7.4.5. Research limitations

In spite of the contributions of the present study to the growing body of sustainability theory and practice, as in any research undertaking, limitations are almost inevitable. Therefore, the results obtained in the present study need to be interpreted in light of certain limitations. However, they do not nullify the findings of this study.

The purpose of my study was to answer the research question: what is the perceived role of accounting in sustainable development practices of mining corporation’s subsidiary operating in Ghana? With regard to how theories can be used to understand accounting and managerial practices, theoretical synthesis is not possible due to the different epistemological positions of each theory (Broadbent & Laughlin, 2005; Creswell, 2015). Thus different research approaches provide answers to different questions and the type of question asked by a researcher influences the methodological assumptions applied in this study (Burrell & Morgan, 1979). Consequently, my choice of methodology may not always be appropriate to provide answers to other questions related to sustainability and accounting research. Nevertheless, the research approach used for this study is appropriate for the research question.

Secondly, conducting the study from an interpretive perspective was time-consuming and involved difficult tasks of collecting and analysing huge quantities of qualitative data. Again, writing an interpretive report has been laborious because it involved constant reviews and amendments while sharing emerging evidence with research communities such as editors and reviewers of research papers, as well as in conferences and seminars (see dedication).

At Gold Fields, getting access to documents like budgets, sustainability reports, and reclamations plans was a challenge. Management had classified those documents as “non-public”. However, samples were shown, and the researcher could view them on managers’ computer monitors and view displays on notice boards. I asked questions about the contents of
some of those documents whilst being allowed to have a look at them and responses were captured by the voice recorder.

Gold Fields is a multinational mining company with mining operations located in South America, Africa, and Australia. I could not access all the other plant’s sites due to access restrictions and funding limitations. Gaining access to top management (the general manager and the regional sustainability manager) at the case site was also not possible. Nevertheless, this may not affect the results as decision making on practices is usually made by middle and lower level managers. Also conducting the study in Ghana was not only costly but also brought the dilemma of choosing methods of analysis and interpretation of data rigorously to satisfy the thesis requirements.

Another concern is the limited perceptions of the Parent Corporation or head office managers in regards to sustainability, sustainability development, performance and practices due to lack of access. The researcher realises that a subsidiary has complex organizational dynamics compared to a large domestic company and the parent corporation is an influential stakeholder for the subsidiary. Nonetheless, management and staff interviews established the relevance of Parent Corporation in their sustainability practices and performance. Also further research could explore sustainability practices in the context of subsidiary-parent relationships and tensions.

Another challenge was the quality of information related to the interviewees’ evaluation of the incidents experienced and recall errors over time (e.g. Christiansen & Tax, 2000). Nonetheless, data triangulation from interviews, observations and archival sources would have mitigated these limitations.

The study investigated a mining company’s subsidiary operating in an emerging economy, namely Ghana; hence any generalisations of the results outside of this context should be applied
with care. However, given the prevalence of mining and its related sustainability challenges in Ghana, and the similarity of Ghana and other developing nations’ perceived weak legal institutional frameworks, many useful lessons from this thesis could be learned and may be applied by academics and practitioners in other emerging economies.

7.4.6. Future research

An interesting area for future research would be further studies on sustainable development practices among multinational mining companies’ subsidiaries in different developing countries, considering that governments in such economies are mostly perceived to lack the capacity to effectively regulate sustainable development-related issues that can give rise to pressures for voluntary sustainable development initiatives (Beddewela & Fairbrass, 2016; Frynas, 2012; Jamali, 2010).

This study was conducted using a case study of a mining company's subsidiary. Future research could examine the intricacy of responses and approaches to sustainable development stakeholder perceptions across subsidiaries of various companies through surveys to establish the variations between industrial sectors in the same and different countries. This would provide a more comprehensive understanding of how stakeholder pressure influences sustainability and the role of accounting in sustainable development.

As noted earlier, the case mining company has subsidiaries in other countries. A similar study could be conducted to compare how the role of accounting is influenced by different political cultures within the same multinational mining company but in different countries. Similarly, future research could compare the focus on the stakeholder activities that influence sustainable development subsidiaries across developed and developing countries, where stakeholder factors influencing multinational companies may vary (Beddewela & Fairbrass, 2016).
A comparative case study between subsidiaries and head office examining different stakeholder perceptions on accounting and sustainable development among them and the role of accounting practices in sustainable development initiatives could also extend my findings (Perez-Batres, Miller, & Pisani, 2010; Beddewela & Herzig, 2013). Such a study would further deepen our understanding of the interdependencies between subsidiary stakeholders on one hand and head office stakeholders on the other.

In conclusion, evidence in this thesis has identified a number of potential directions future sustainability and accounting research could take. This study makes some valuable insights into how stakeholders perceive sustainability and the role of accounting in sustainable development initiatives from the semi-structured interviews, archival sources and the researcher’s observations. I believe the interpretations and conclusions of this study provide new insights that enhance our knowledge of how persons burdened with the not unproblematic role of stakeholder perceive sustainability, the role of accounting in sustainable development initiatives, and sustainability performance and challenges differently.
Appendix 1: Letter asking for consent from Gold Fields

Dear Sir/ Madam,

My name is Kwame Oduro AMOAKO, a PhD student at the University of Canterbury in the Department of Accounting and Information systems (ACIS) under the supervision of Associate Professor Beverley Lord and Dr Keith Dixon. I am also a lecturer at Sunyani Polytechnic. I humbly seek the consent of your company to participate in a research project entitled: Achieving sustainability success in the mining industry of emerging economies through accounting: Evidence from Ghana. The purpose of this study is to investigate how accounting can help environmental decision making of mining firms in developing countries. This study has been approved by the University of Canterbury’s Human Ethics Committee.

I chose Gold Fields because the nature of the study requires a multi-national firm in Ghana with a lot of experience and having high recognition for sustainability. One of the largest gold mining company in the Dow Jones Global Total Stock Market Index which is based on a rigorous analysis of corporate social, environmental and economic performance, there is no doubt you are the right choice for my study. I therefore wish to learn from your organization’s commitment to environmental sustainability with regards to your environmental management programmes such as reclamation policies, resettlement action plans, and environmental and social action plans. Secondly, Gold Fields Ghana operates in Ghana where I come from and have worked (Sunyani Technical University) for six years; hence there is proximity and some acquaintance with your operations which I think will facilitate my research.

At the end of the study, it is expected that the outcome of my experience with Gold Fields will give more insight on the role accounting plays in Gold Fields Ghana’s success story on sustainability decision making. Consequently, I intend to produce a research report on my experience with Gold Fields for the organisation, teaching materials for us on our university and polytechnic courses and possibly academic papers.

Participation in this study is voluntary and your organisation or individual participants would be able to withdraw consent and discontinue participation in this study at any time without prejudice or penalty. Participants are also free to refuse to answer any question I might ask them.

There are no risks that are anticipated from your organisation’s participation in the study. The data and information collected during this study will remain confidential in secure premises. Only the researcher and his supervisors will have access to the study data and information which will be gathered. There will not be any identifying names on the interview transcripts and information, transcripts and recordings will be kept in a locked cabinet and a password–protected computer. Both participants’ and the company’s names as well as any other identifying details will not be revealed in any report of the results of this study unless permission is given.

Further information regarding the research can be obtained from the principal researcher Kwame Oduro Amoako, email: kwame.amoako@pg.canterbury.ac.nz or my research supervisors, Associate Professor Beverley Lord, email: beverley.lord@canterbury.ac.nz and Dr Keith Dixon, email: keith.dixon@canterbury.ac.nz.

Thank you for considering this request. Your help will be greatly appreciated as I look forward to hearing from you soon.

Yours sincerely,

Kwame Oduro Amoako.
Appendix 2: Research proposal summary sent to Gold Fields


**RESEARCH BACKGROUND AND MOTIVATION**

Veiga and Beinhoff (1997), Warhurst (1999) and Amponsah-Tawiah and Darney-Baah (2011) assert that mining exploration and production activities certainly cause physical and material deterioration to the environment as well as affecting the inhabitants around mining locations. According to Chiaro and Joklik (1998) and Amponsah-Tawiah & Dartey-Baah (2011) even when the best available practices are meticulously followed, challenges such as the emissions of volumes of waste materials, the creation of large-scale surface disturbances and the exposure of previously buried geological materials to the forces of oxidation and precipitation are inevitable. The authors claim that these challenges culminate in complex health and safety hazards as mining activities expose the environment to pollutants such as fumes, chemicals and dust. Thus environmental issues in mining operations have taken center stage in the past two decades (Omalu & Zamora, 1999).

Many environmental accounting studies have used manufacturing firms and a few have studied service organisations. However, mining is one of the industries most likely to affect the environment (Schueler, Schueler, Kueemmerle, Schröder, 2011; Bland, 2014). According to the World Bank (2002) the industry by its very nature always leaves indelible social, environmental and economic foot prints wherever it finds itself. Ross (2001) concludes that the best option for poor economies is to utterly avoid the extraction of their natural resources and rather focus more on the agriculture of which, in effect, mining firms end up depriving these economies. Even though some oil exploration firms were listed as part of the world’s 100 most sustainable companies in 2014 (Forbes, 2014), it is quite disturbing that no gold mining firm was on this list. This could be because of the damage they cause to the environment (Schueler et al, 2011 and Bland, 2014). Environmental research on this industry could result in recommendations for improvement in this industry.

Many of the prior environmental accounting studies were conducted in advanced economies in North America, Europe and Asia with few studies in Africa and South America. Some of the few studies in Africa were in South Africa (De Beer & Friend, 2006 and Doorasamy & Garbharran, 2015), Nigeria (Enahoro, 2012) and one in Uganda (Namakonzi & Inanga, 2014). Meanwhile, recently, the Cable News Network (CNN, 2014) ranked the top 10 countries at risk for climate change as follows: Bangladesh, Guinea-Bissau, Sierra Leone, Haiti, South Sudan, Nigeria, Dr Congo, Cambodai, Phillipines and Ethiopia. The countries in these rankings are all developing nations with 60% located in Africa. This implies that developing countries in particular are more vulnerable to sustainability challenges. Clearly, there is the need to intensify environmental research in these nations.

In addition, several environmental accounting studies conducted in advanced economies (such as Greig et al., 2006; Burritt et al., 2009; Ferreira et al., 2010; Jalaludin et al., 2011; Christ & Burritt, 2013) agree that environmental accounting is practiced to some extent but not fully explored. However, the few empirical studies conducted in emerging economies (such as those in Africa named above) have contradictory findings. Samaha, Dahawy & Hussainey (2011) claims that developing and emerging nations are different from each other in diverse ways. Thus, there are key dissimilarities between the emerging countries of Eastern European and China, as there are between countries in the Middle East, North Africa and sub-Saharan Africa (Fawzy, 2004). Consequently, there is a need for further research to add evidence to previous environmental accounting research findings in emerging economies.
In spite of the fact that the main purpose of environmental accounting is to provide information for decision making to management, many environmental accounting empirical studies have been much concerned with environmental accounting implementation (such as Gedenne & Zaman, 2002; Ross & Kovachev, 2009; Jalaludin, Sulaiman & Ahmad, 2011; Che Zuriana, Rapiah, Faidzulain & Amin, 2015) because unless it is well implemented it may mislead decision making. However, equal attention also needs to be given to the use of environmental accounting, how it affects decision making and how it enables the implementation of the decisions it contributes to. Hence, there is the need for further empirical studies in that direction.

So far, there is limited environmental accounting research in Ghana in spite of the numerous environmental challenges the nation faces from over 26,000 manufacturing firms (Krakah, Nsowah-Nuamah, Awoonor-Williams & Teal, 2009) as well as almost 70 small and large scale mining firms, excluding hundreds of illegal miners (KPMG, 2014). Rahaman (2000) and Rahman, Lawrence & Roper (2004) studied perceptions of social and environmental reporting by senior managers of Ghanaian companies with emphasis on motivations for corporate social responsibility (CSR) reporting. In addition, a very limited number of environmental reporting studies have been done at the national accounting level (Kurantin, 2011). Kurantin’s theoretical review emphasised the need to “move towards an enhanced approach that supports and guide[s] oil and gas industry, environmental management within the processes of good governance, security, economic growth and development” (p. 73). Hence, there is a need for further empirical environmental accounting studies on the mining industry in Ghana.

RESEARCH QUESTIONS

The research seeks to answer the following questions:

• What EMA information is gathered and reported by mining firms in Ghana.
• What incentives or motivations are there for mining firms in Ghana to practice EMA?
• What are the key features of EMA information that Ghanaian mining firms look for?
• How does EMA information affect decision making and implementation in mining firms in Ghana?
• What are the challenges facing mining firms in the use of EMA information in decision making and implementation in Ghana?
• How could the application of EMA for decision making and implementation be increased within mining firms in Ghana?

WHY I CHOSE GOLD FIELDS AS A CASE STUDY

I chose Gold Fields because the nature of the study requires a multi-national firm in Ghana with a lot of experience and having high recognition for sustainability. Gold Fields Limited has won several international sustainability awards: since 2010 it has been ranked A+ in the Dow Jones Sustainability index and 1st in the carbon disclosure leadership index amongst others. In addition, the company has been able to satisfy several highly recognised reporting indexes such as the GRI sustainability report, UNGC, amongst others (Gold Fields, 2015). These reporting indices are based on a rigorous analysis of corporate social, environmental and economic performance, there is no doubt it is the right choice for my study.

I therefore wish to learn how accounting fits into your organization’s commitment to environmental sustainability with regards to your environmental management programmes such as reclamation policies, resettlement action plans, and environmental & social action plans. Secondly, Gold Fields Ghana operates in Ghana where I come from and have a little acquaintance with their operations which I think will facilitate my research.

RESEARCH METHODOLOGY

Interviews: I would like to carry out face-to-face semi-structured interviews with up to 15 departmental and unit heads as they form the core for decision making in organisations. However, this number may change depending on the situation at the plant site. With permission from respondents, each interview will be audio recorded and is expected to last for 30 minutes to 60 minutes depending on how involved the interviewee is in decision making. Some issues I want to find answers to are included in the attached interview guides.
**Document Analysis:** In addition, I would like to be able to see what sort of financial information is used in decision making. If possible I would analyse documents and written materials, such as annual financial reports, environmental management programme reports (such as reclamation records, budget books, trust fund information, plant closure plans, and general ledger), newspapers/newsletters, periodicals, company website and computer database and sustainability meeting minutes.

**Observations:** Being able to observe the plant in action, sustainability meetings and other plant sites activities and meetings will enable me to see accounting in action (Sharpe, 2004).

**RESEARCH CONTRIBUTION**

At the end of the study, it is expected that the outcome of my experience with Gold Fields will give more insight on the role accounting plays in Gold Fields Ghana’s success story on sustainability decision making. As well as my PhD thesis, I intend to produce a research report on my experience with Gold Fields for the organisation, teaching materials for us on our university and polytechnic courses and possibly academic papers.

Consequently, this study will contribute to the debate on EMA by obtaining perceptions of managers on how environmental accounting affects decision making and implementation of decisions taken in the mining sector of Ghana, a developing nation. Secondly, the research will contribute to practice because I will be able to identify barriers to using effective and efficient environmental management information systems in decision making and implementation. Furthermore, recommendations provided by the researcher will help managers to make more effective use of EMA information especially, in a developing economy context.
Appendix 3: Access approval letter from Gold Fields

23rd November, 2015

College of Business and Law
New Zealand

Attention: Mr. Kwame Oduro Amoako

Dear Sir,

RE: A REQUEST TO CONDUCT AN ACADEMIC RESEARCH

We refer to your letter dated 12th November, 2015 and write to inform you that Management has agreed to permit you to carry out your research program on the topic “Achieving sustainability success in the mining industry of Ghana through management accounting: Evidence from Ghana” under the terms spelt out below;

1. That you contact the Senior Training Officer, Learning and Development directly in writing or his representative indicating when you will commence the research work and meet him at the Training Centre, Damang Mine.
2. That you attend an induction at our Training Centre subject to medical fitness prior to the commencement of the work.
3. That the data be treated as confidential.
4. That the information obtained from the Company is used for academic purposes only.
5. That a copy of the final draft of the report be sent to the Human Resources Manager or his representative through the Senior Training Officer, Learning and Development for his comments and approval prior to submission.

You will also be required to sign a non-disclosure confidentiality ownership of documents and intellectual property contract with the company before commencement of the data collection.

Yours faithfully,

George Mayall Damien
Human Resources Manager

Co Environmental Protection Services Superintendent

Directors:
N J Holland (Chairman), A Baku (Managing Director), K Ansah, K Abeeji, M Ababio, F F Akoto-Awah
Appendix 4: Interview guide

The cost/ management accountants’ interview guide

1. How long have you been working with the company?
2. What kind of education did you pursue after high school?
3. Who are your stakeholders?
4. What do you understand by the term “sustainability”?
5. What areas does your company look at when it comes to sustainability?
6. How far do you think the company has gone on sustainability issues?
7. What type of cost data on sustainability does the company keep?
8. Why does the company prepare such environmental cost data?
9. Who prepares the environmental or sustainability cost data?
10. For whom are these data compiled or reported?
11. What role does such data play in decision making processes of the company?
12. What are the key features of the sustainability cost data that you compile?
13. What areas or sectors of the company make use of the sustainability data that you prepare?
14. What incentives or motivations are there for the company to keep such data?
15. Has the company got any environmental system (e.g. ISO system)?
16. If any, who runs the system?
17. What data comes out of the system?
18. Who uses it and what for?
19. What are the challenges the company faces when it comes to cost data on sustainability?
20. How do you think these challenges could be resolved?
21. Overall what do you see as the role of the accountants when it comes to sustainability?

Top and middle level manager’s interview guide

1-9. Questions 1-9 as above

10. How often does the accountant provide environmental cost data for decision making?
11. What is usually contained in such information?
12. How do you use this information for decision making?
13. What areas or sectors of your company make use of the sustainability data provided by the accountant?

14. What are the key features of the sustainability cost data the accountant provides?

Questions 15-21 as above.

Lower level managers’ interview guide

Questions 1-9 as above.

10. How often does Gold Fields provide sustainability cost data for decision making?

11. Why do you think the environmental cost data are prepared?

12. What is usually contained in such information?

13. How do you use this information for implementing decision making?

14. What incentives or motivations are there for the accountant to keep such data?

15. Has the company got any environmental system (e.g. ISO system)?

Questions 16-21 as above.
Appendix 5: Human Ethics Committee’s query and approval letters

HEC APPLICATION 2015/131
Human Ethics
Sent: Wednesday, October 28, 2015 12:25 PM
To: Kwame Ankobia
Cc: Beverley Lord

Dear Kwame,

The Human Ethics Committee has reviewed your application and raised several questions which they would be grateful for your feedback on in response to.

- The committee would like you to discuss the context of the research in Ghana given the concern over mining effects on the environment in that country. Please comment on the implications for your research project of these politics.
- What is the process for gaining consent from the firm?
- What language will the interviews be conducted in?
- Please clarify and give more detail on the process for having informal conversations with the community.
- Question 13 – has permission been received from top management? Please ensure that employees do not face coercion to participate.
- Question 19 – the proposed questions for the accountants seem extensive; please comment.
- Question 23 – again, please ensure there is no duress from managers to employees.
- Question 28 – please clarify data security and storage including where hard copies will be locked away.
- Question 36 – if a transcriber is used, please provide a confidentiality agreement.
- Question 38 – please consider whether the identity of the company can really be kept confidential. If it cannot, please discuss the implications for the identification of the senior managers.

Information Sheet –
- Please provide more time for withdrawal of the interview – a week is not long enough.
- Generally the information sheet needs more information on the project.
- Please include the following statement: This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human.ethics@canterbury.ac.nz).
- In the introduction to the information sheet, please note that this research is for a PhD.

Consent Form –
- Please include a clause stating that participants can withdraw participation from the study without penalty at any time up until data analysis has begun.

The Committee would be grateful if you could address the above issues in writing by amending your application and/or supporting documents accordingly; please return them to me for the Committee’s further consideration. These must be sent via email attaching copies of the amended documents and including the HEC application number in the subject line of the email. If you wish to disagree with any comments, please carefully and briefly state your argument.

If you are working with a supervisor, a copy of this email has been forwarded to your supervisor to assist in any amendments/clarification required.

If you wish to discuss any of the above comments prior to submitting your revised application, please contact the Chair, Lindsey MacDonald. The best way to contact him is via his cell phone on 0274 482 289. Emails to Lindsey should be directed through the Human Ethics email address (human.ethics@canterbury.ac.nz).

Kind regards

Lynda
Lynda Griffin

https://exchange.canterbury.ac.nz/owa/?d=Iem86I=IPMNixed&d=RGpAAACFFyntGfslRTqEoTeQp1Tz2HflwCLpOHNEdJESZeRjOADOJDX/iAAAkK4vAACL.pl
HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffen
Email: human.ethics@canterbury.ac.nz

Ref: HEC 2015/131

11 November 2015

Kwame Amosko
Department of Accounting & Information Systems
UNIVERSITY OF CANTERBURY

Dear Kwame

The Human Ethics Committee advises that your research proposal “Sustainability and management accounting in the mining industry of Ghana” has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 4 November 2015.

Best wishes for your project.

Yours sincerely,

[Signature]

Lindsey MacDonald
Chair
University of Canterbury Human Ethics Committee
Appendix 6: Participants’ information sheet


Principal Researcher’s Name and Contact Details:
Kwame Oduro Amoako, Department of Accounting and Information Studies, University of Canterbury, Christchurch-New Zealand. Telephone: +233 244023982/+64 2108607844. Email: kwame.amoako@pg.canterbury.ac.nz

What is this study about?

This study is for a PhD thesis with the aim to investigate how accounting can help environmental decision making of mining firms in developing countries using Gold Fields Ghana’s success story on sustainability.

Why am I being asked to take part in this study?

You are being asked to help with this study because you are one of the decision makers of your company.

What am I being asked to do?

If you agree to help with this study, you will be asked to meet the researcher to share your experience through a conversation (interview) on the subject matter at the company premises at a time of your choice. I am happy to discuss the time you wish to undertake the conversation. The interview will last about 30-90 minutes and will be recorded. During the interview the researcher will ask you about your experiences and the role you play in sustainability. Permission will be asked to record the interview and a transcript of the interview will be sent to you for checking before I use it for my report.

Will I benefit from taking part?

There might not be any direct benefit to you personally. However, at the end of the study, it is expected that the outcome of my experience with Gold Fields will give more insight on the roles you play as a manager in Gold Fields Ghana’s success story on sustainability decision making. Consequently, I intend to produce a research report on my experience with Gold Fields for the organisation, and teaching materials for us on our courses. If you would like to receive a summary of the study findings, this can be requested by ticking the relevant box on the consent form.

Are there any risks?

There are no risks or discomforts that are anticipated from your participation in the study. The data and information collected during this study will remain confidential in secure premises during the study without linking it to you in anyway. Your name will not be mentioned in any of the reports and articles I write.

Your rights:

Whether you decide to take part or not, your position as a manager will not be affected by your decision.

Even if you agree to be involved, you can change your mind before or during the interview and you do not have to give a reason.
If you decide after the interview you do not want to take part, you can let me know within four weeks and I will destroy your interview recording.

All your information will be treated as confidential. As I said earlier, in the research report, your name will not be connected with anything you tell us.

At any time you have the right to contact the researcher or his supervisors to check on This study project or make a complaint.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Further information:

Further information regarding the research can be obtained from the principal researcher or either of my research supervisors: Associate Professor Beverley Lord, email: beverley.lord@canterbury.ac.nz and Dr Keith Dixon, email: keith.dixon@canterbury.ac.nz Telephone: +64 3 366 7001.

Thank you for your consideration. Your help is greatly appreciated.
## Appendix 7: Reporting indexes

### 1. UNITED NATIONS DIVISION FOR SUSTAINABLE DEVELOPMENT INDEX

<table>
<thead>
<tr>
<th>Environmental cost/expenditure categories</th>
<th>Air / Climate</th>
<th>Waste water</th>
<th>Waste</th>
<th>Soil / Groundwater</th>
<th>Noise / Vibration</th>
<th>Biodiversity / Landscape</th>
<th>Radiation</th>
<th>Other</th>
<th>Total</th>
<th>Source document</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Waste and emission treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1. Depreciation for related equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2. Maintenance and operating materials and services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3. Related personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4. Fees, taxes, charges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5. Fines and penalties</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6. Insurance for environmental liabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7. Provisions for clean-up costs, remediation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Prevention and environmental management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1. External services for environmental management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2. Personnel for general environmental management activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3. Research and development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4. Extra expenditure for cleaner technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5. Other environmental management costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Material purchase value of non-product output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1. Raw materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2. Packaging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3. Auxiliary materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4. Operating materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5. Energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6. Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Processing costs of non-product output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Environmental expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Environmental revenues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1. Subsidies, awards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2. Other earnings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Environmental revenues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: UNDSD, 2001)
## 2. GLOBAL REPORTING INITIATIVE (GRI) INDEX - MINING AND METALS SECTOR

<table>
<thead>
<tr>
<th>Category</th>
<th>Economic</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspects</td>
<td>Economic Performance</td>
<td>Materials</td>
</tr>
<tr>
<td></td>
<td>Market Presence</td>
<td>Energy</td>
</tr>
<tr>
<td></td>
<td>Indirect Economic Impacts</td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>Procurement Practices</td>
<td>Biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effluents and Waste</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Products and Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compliance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplier Environmental Assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Grievance Mechanisms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-</td>
<td>Human Rights</td>
</tr>
<tr>
<td>Categories</td>
<td></td>
</tr>
<tr>
<td>Aspects</td>
<td>Employment</td>
</tr>
<tr>
<td></td>
<td>Labor/Management Relations</td>
</tr>
<tr>
<td></td>
<td>Occupational Health and Safety</td>
</tr>
<tr>
<td></td>
<td>Training and Education</td>
</tr>
<tr>
<td></td>
<td>Diversity and Equal Opportunity</td>
</tr>
<tr>
<td></td>
<td>Equal Remuneration for Women and Men</td>
</tr>
<tr>
<td></td>
<td>Supplier Assessment for Labor Practices</td>
</tr>
<tr>
<td></td>
<td>Labor Practices</td>
</tr>
<tr>
<td></td>
<td>Grievance Mechanisms</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: GRI 2014)
References


Brew-Hammond, A., & Kemausuor, F. (2009). Energy for all in Africa—to be or not to be?!. *Current Opinion in Environmental Sustainability, 1*, 83-88.


sustainability reports? A critical analysis of external assurance under the requirements of the international council on mining and metals. Corporate Social Responsibility and Environmental Management, 17(6), 355-370.


Onn, A. H., & Woodley, A. (2014). A discourse analysis on how the sustainability agenda is defined within the mining industry. *Journal of Cleaner Production, 84*, 116-127.
Opoku-Ware, J. (2010). *The social and environmental impacts of mining activities on indigenous communities: The case of Newmont Gold (Gh) limited (Kenyasi) in Ghana* (Unpublished master's thesis), University of Agder, Kristiansand.


