Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil & Gas Firms in Australia

Volume 1

Lynda Nwanyibunwa Andeobu

This thesis is submitted in total fulfilment of the requirements for the degree of Doctor of Philosophy

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Australia

Submitted in October 2016
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Abstract

Risk is an unavoidable issue in most activities of life, including business. Risk-management is increasingly a hot-button issue for stakeholders and the general public. As such, it is of rising importance in the high-risk extractive industries of mining and oil & gas. Specifically, risk-management can help firms reduce business failure-rates and enhance corporate sustainability. However, the integration of risk-management and corporate sustainability within planning, financing, and operations remains a key challenge for the sector. This research seeks to fill this gap by investigating and evaluating the current use of risk-management by extractive-sector firms to add value to stakeholders. Given that risk-management and its impact on corporate sustainability is enormous, this study will provide useful insights into the risk-management practices undertaken by extractive-sector firms in Australia and how cost-effective risk-management practices contribute to the overall enhancement of financial performance, stakeholder value and corporate sustainability of those firms. This study, after drawing data from Australia’s top 10 mining/metals firms and top 10 energy/utilities firms, uses: i) Questionnaires to give a background/context for the study, and ii) Interviews to further probe issues raised and gain a deeper understanding. The analysis in this study found that risk-management practices are: i) Perceived by management practices to contribute significantly to financial performance, stakeholder value and corporate sustainability of their firms ii) Very similar across mining firms and those in oil & gas, and iii) Too limited in application in the extractive-sector and should be extended beyond traditional hazards. Overall, it was found that risk-management systems appear to be comparable across Australia’s large mining firms and oil & gas firms. However, at a detailed level, these basic systems and structures of risk-management are adjusted and adapted to meet specific needs, corporate strategies, organisational objectives and environmental pressures.
Statement of Authorship

Except where explicit reference is made in the text of the thesis, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No other person’s work has been relied upon or used without due acknowledgement in the main text and bibliography of this thesis.

Signed:…………………………… Signed:…………………………………………………

Dated…………………………….. Dated: …………………………………………

Lynda N. Andeobu                 Dr Samanthala Hettihewa
Candidate                         Principal Supervisor
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Notwithstanding the invaluable contributions of these persons, I bear full responsibility for the strengths and weaknesses of this thesis.

More thanks and appreciation are in fact due than can be expressed here.

Lynda Nwanyibunwa Andeobu

October 2016
Dedication

This doctoral thesis is heartily dedicated to Almighty GOD, Saviour, Redeemer and Comforter….. For HIS boundless love and eternal support that enables me to pursue my ambitions in life. Only with HIS supreme grace, never-ending blessings and divine protection I can complete this thesis. Great is thy Faithfulness!
Publications from this Thesis

The following research papers and publications have been produced from this thesis:

Refereed Journal Publications (ABDC Ranked)


**Best Overall Research Paper**

The above research paper, one of the research outcomes of this thesis, was awarded **Best Overall Research Paper** at an International Research Conference in Sydney.


Peer-Reviewed International Conferences


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<td>Australian Institute of Health and Welfare</td>
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<td>Department of Resources, Energy and Tourism</td>
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<tr>
<td>EITI</td>
<td>Extractive Industries Transparency Initiative</td>
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<tr>
<td>EDR</td>
<td>Economic Demonstrated Resources</td>
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<tr>
<td>ERM</td>
<td>Enterprise Risk Management</td>
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<td>ES</td>
<td>Extractive Sector</td>
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<td>EU</td>
<td>European Union</td>
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<td>FP</td>
<td>Financial Performance</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GMI</td>
<td>Global Mining Initiative</td>
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<td>GRI</td>
<td>Global Reporting Initiative</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>HREC</td>
<td>Human Research Ethics Committee</td>
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<tr>
<td>ICMM</td>
<td>International Council on Mining and Metals</td>
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<tr>
<td>IIED</td>
<td>International Institute for Environment and Development</td>
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<td>IIISD</td>
<td>International Institute for Sustainable Development</td>
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<td>IRM</td>
<td>Institute of Risk Management</td>
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<tr>
<td>LNG</td>
<td>Liquefied Natural Gas</td>
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<tr>
<td>LPG</td>
<td>Liquefied Petroleum Gas</td>
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<tr>
<td>MCA</td>
<td>Minerals Council of Australia</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MMSD</td>
<td>Mining, Metals and Sustainable Development</td>
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<td>NOPSA</td>
<td>National Offshore Petroleum Safety Authority</td>
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<td>NOPSEMA</td>
<td>National Offshore Safety and Environmental Management Authority</td>
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<tr>
<td>OECD</td>
<td>Organisation of Economic Cooperation and Development</td>
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<tr>
<td>OPEC</td>
<td>Organisation of Petroleum Exporting Countries</td>
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<tr>
<td>OTC</td>
<td>Over the Counter</td>
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<tr>
<td>PCAOB</td>
<td>Public Company Accounting Oversight Board</td>
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<td>PWC</td>
<td>PricewaterhouseCoopers</td>
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<td>RBA</td>
<td>Reserve Bank of Australia</td>
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<td>RM</td>
<td>Risk Management</td>
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<td>SV</td>
<td>Stakeholder Value</td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNEP</td>
<td>United Nations Environmental Program</td>
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<td>USEIA</td>
<td>United States Energy Information Administration</td>
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<td>WBSCD</td>
<td>World Business Council for Sustainable Development</td>
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<td>WCED</td>
<td>World Commission on Environment and Development</td>
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Chapter One
Introduction

*Risk is an unavoidable and inevitable fact of life. It is a phenomenon that pervades all human existence*  
*(Hjort, 2012)*

*Risk-management protects and adds value to the organisation and its stakeholders through supporting the organisation’s objectives, goals and vision*  
*(AIRMIC, ALARM & IRM, 2002)*

*Firms that conduct their business operations in the spirit of corporate sustainability will remain truly sustainable*  
*(Wilson, 2003)*

*Achieving corporate sustainability performance requires efficient collaboration and communication with various stakeholder groups*  
*(Botin, 2009; Hancock, 2001)*
1 Introduction

The traditional view that firms maximise profit has evolved to better explain why firms exist and why people invest in them. The current Theory of the Firm suggests that firms act to maximise shareholder wealth or (in more complex variants such as agency theory) firms act via more complex processes so that outcome occurs. Risk is an inherent component in investments and entrepreneurial activities and without a strong and effective theory of the firm, it is difficult to explain why and how firms should engage in risk-management (RM). The risk-management contribution to financial performance (FP), stakeholder value (SV) and corporate sustainability (CS) is increasingly vital to the success of every organisation (KPMG, 2001). Catering to the current very dynamic and evolving nature of the notion of what constitutes effective risk-management; this study broadly defines risk-management as the effort to adjust, control, and modify a firm’s culture, processes and structures to optimise potential opportunities, while managing blowbacks and other adverse effects (AS/NZS ISO 31000:2009). Risk-management is particularly useful within the extractive-sector (ES), as a means to create and maintain competitive advantage.

As Dolenc, Stubelj and Laporsek (2012) note, the traditional theory of the firm fails to provide definitive answers to such key questions as:

1) What is the objective of the firm?

2) In whose interest is the firm governed?

3) Is the primary objective of the firm focused on its shareholders or does it extend to all stakeholders?

While maximisation of shareholder value may be a final outcome, the process by which that outcome is derived appears to be far more complex. The role and contribution of firms
within society has not greatly changed; what has changed is our understanding of the nature of the maximising process (Kristoffersen, Gerrans & Clark-Murphy, 2005).

The Lozano (2012) and Zingales (2000) discussions on the emergence of the contemporary view of firms provides a rationalization of the development of Stakeholder Theory. Its emergence in the 1970s provides support to the view that firms have obligations to various groups and to society and their prosperity and/or survival can depend on how well they are able and seen to meet their obligations (Freeman, 1984; Zingales, 2000). Stakeholder theory promotes the view that while creating value is an important and an explicit part of doing business, it is not the only thing. According to Freeman, Wicks and Parma (2004) the focus of stakeholder theory is articulated in two core questions:

1) **What is the purpose of the firm?** (Managers are encouraged to articulate the shared sense of the value created and/or of what brings the key stakeholders together. It also propels the firm forward – enabling it to be competitive and operationally and financially sustainable);

2) **What responsibility does management have to stakeholders?** (Managers articulate how they want to do business – specifically, what kind of relationship they want and need to create with their stakeholders to deliver on their stated and unstated obligations.

Managers must develop relationships, inspire their stakeholders and create communities where everyone strives to give their best to deliver the value the firm promises. Stakeholders are an important part of value creation for the firm. Successful firms have developed and managed their businesses in ways that are highly consistent with the stakeholder theory. These firms understand the core insights of the stakeholder theory and
have used them to create ongoing business success and corporate sustainability (Freeman, Wicks & Parma, 2004).

Corporate sustainability improves long-term stakeholder value by refining and redirecting opportunities to enhance social reputation (Dow Jones Sustainability Index, 2012; Stegemann, Pritsch & Freeman, 2008). Corporate leaders are increasingly recognising that their organisations have the capacity to make societies not only more prosperous but also more sustainable (Freeman, Wicks & Parma, 2004; Lozano, 2012).

However, corporate sustainability for many organisations particularly for extractive-sector firms can be enhanced when the dynamics between risk-return trade-off is optimised. A risk-return trade-off implies that a riskier investment should demand a higher expected return relative to the risk-free return. It asserts that over the long run, it is not possible to achieve exceptional returns without accepting substantial risk (Malkiel & Xu, 1997).

According to Bello and Adedokun (2011) the size of risk for most firms is different and varies with the size of their returns. However, high risk is not always matched to substantial returns. Thus, by managing risk and balancing the risk-return trade-off, extractive-sector firms can enhance financial performance, increase their share price, maximise their stakeholder value and raise the attractiveness of their companies to investors, creditors and other potential stakeholders.

Managing risk to balance risk and return enhances the financial and operating stability of firms and, such sustainability is key goal for every organisation and a basic expectation of stakeholders (KPMG, 2001). How best to manage risks to demonstrate value and enhance corporate sustainability is a vital issue. Extractive-sector firms need cost-effective risk-management to: maintain social legitimacy; justify their expanding and deepening entrée into emerging markets; assure smooth supply and distribution chains; and mitigate pressure
from stakeholders to intensify transparency, increase disclosure, and to otherwise meddle in the operations of the firm. Extractive-sector managers must have a good understanding of risk-management in terms of why it is needed, its effects and how to best implement and control it (Hettihewa, 2016). As such, this study should be of great interest to extractive-sector managers, academics, regulators, investors, creditors and the full range of key stakeholders in which extractive-sector firms have and are committed to the best risk-management practices.

1.1 Research Background

Risk-management is one of the fastest growing disciplines of modern business. The aim is no longer to avoid losses, but to enhance financial performance, stakeholder value and corporate sustainability. Contemporary perceptions of firms widely differ from traditional perspectives and corporate objectives and have shifted from maximizing profits to: maximizing shareholder wealth; assuaging stakeholder issues; and enhancing sustainability and social legitimacy (Kristoffersen, Gerrans & Clark-Murphy, 2005). In response to rapid technological change, the notion of risk vs. return is dramatically changing in every sector including the extractive-sector. The focus of risk-management has shifted from just avoiding hazards and damaging events to spawning indirect rewards, opportunities and benefits as well (Stegemann, Pritsch & Freeman, 2008). The question is: why is there such an interest in risk-management? Until recently, risk has been viewed by many organisations as a negative concept. However, firms have recognised that risk-management is an integral part of generating sustainable (long-term) stakeholder value. This positive interpretation of risk-management reflects the new understanding of the relationship between well-managed risk and improved financial and operating performance. Thus, when management mobilise the connection between risk-management and the achievement of corporate objectives, the firms’ financial performance can be enhanced significantly (PWC, 1999).
For extractive-sector firms, destructive risk events are an everyday reality. At this point, two critical questions emerge:

1) Are extractive-sector firms sufficiently aware and agile enough to respond to the impact of risks as quickly, efficiently and confidently as possible?

2) Are extractive-sector firms adequately armed with cost-effective risk-management solutions to mitigate the impact of the diverse risks they face?

These and other related questions are the focus of this study. The objective of this study is to critically investigate the capacity of risk-management to enhance financial performance, achieve corporate objectives, create stakeholder value and enhance corporate sustainability in the Australian extractive-sector. The theoretical capacity of risk-management will be contrasted with its actual use/role in those functions in 20 Australian mining and oil & gas firms of global reach. This study will also identify and compare the risk-management techniques, processes and practices of the selected (exemplar) firms for use as a window into how financial performance and corporate sustainability are enhanced by extractive-sector firms (mining and oil & gas) in Australia. This research will further explore the nature of risks in the extractive-sector, their risk-management solutions, how the selected (exemplar) firms perceive, measure and effectively manage their risks, and how they are changing their approach to risk-management to remain competitive, enhance financial stability, increase share value and keep stakeholders satisfied in an ever evolving business environment.

Although, extractive-sector firms are faced with diverse risks which affect their financial performance and corporate sustainability, this study (for manageability purposes), focuses on four key risks of the extractive-sector: i) Financial; ii) Operational; iii) Strategic; and iv) Compliance. Financial risk is highlighted as other risks are subsumed within it.
Particular attention is given to the processes by which the management of operating risk, moral hazard and other non-financial risk translate into a financial effect (e.g. via the share price-to-earnings ratio, the cost and availability of credit and/or the cost of transactions). These will show how management can create and preserve financial value via cost-effective risk-management practices. Sheehan (2010) is of the view that excessive risk (whether general or industry specific) can increase a firm’s costs and/or decrease its revenue and as a result adversely impact its financial performance. The ability to manage risks effectively is one of the key characteristics that differentiate effective organisations from the others. In evaluating, assessing and managing enterprise risks, executive management and boards are asking, why:

1) Is risk perceived differently,

2) Is the impact of the same risk different,

3) Are there differences in risk responses, and

4) Do proposed risk-management strategies sometimes differ from what is actually done?

In seeking answers to these questions, extractive-sector firms are beginning to review their risk: awareness, appetite, culture and competence. Effective corporate risk-management frameworks, techniques and practices, when adequately implemented can assist in finding answers to these questions.

Both quantitative and qualitative methodologies (mixed method) will be used in this study. The implementation of this methodological approach will encompass some distinct phases which are discussed in chapter 7.

The future of the extractive-sector has changed and as a result the risk-management techniques and strategies have also changed. The application of traditional risk-
management practices and management principles has proven insufficient to prevent failure in the sector (Mitchell, Marcel & Mitchell, 2012). This study will contribute to the risk- management and corporate sustainability literature through providing a critical evaluation and assessment of the contribution of risk-management in enhancing financial performance, stakeholder value and corporate sustainability in the extractive-sector. The findings of this study will demonstrate and establish how cost-effective risk-management practices can be used as a tool to maintain and preserve financial value which can be adapted or used by other companies interested in integrating cost-effective risk-management practices into corporate sustainability of their business processes—at corporate, divisional and operational levels.

1.2 Rationale for the Selection of the Extractive Sector for this Study

The size of the world’s population growth and the speed of urbanisation in BRIC nations (i.e. Brazil, Russia, India, and China), coupled with ongoing energy requirements in the developed world have created unprecedented demand for minerals, oil and natural gas. Australia is well positioned to meet the challenges of increasing global energy demand as it has substantial identified resources of major minerals and natural gas (ABS, 2012). Australia is the ninth largest energy producer, accounting for around 2.4 percent of world energy production. The extractive-sector made a significant contribution to this achievement. The sector is responsible for the lion share of Australia’s exports, and this export has continued to grow in recent years compared to the overall industrial sector (ABS, 2012; Roarty, 2010). The Australian extractive-sector is a key contributor to the Australian economy. The sector has brought considerable revenue to the state and federal government and it is the mainstay of the economy (Roarty, 2010). Apart from the economic benefits, the extractive-sector is essential for providing the raw materials upon which
modern society depends. For example, domestic coal provides about 80 percent of Australia’s electricity that powers the nation (ABS, 2012; Roarty, 2010). In addition, the sector has contributed to GDP, employment, investments and new projects development. Other contributions are rural and regional development, technological innovation and environmental research.

This study is conducted using 20 top diversified mining and oil & gas companies operating in Australia—these firms differ greatly from junior mining firms (see Iddon, Wright & Hettihewa, 2014). In terms of operations and revenue, the 20 selected firms represent a significant percentage of the top 100 mining and oil & gas companies operating in Australia. Further, these firms have operated in Australia for several decades and have global operations in major cities around the world. Based on the significance of this sector, the selected (exemplar) companies and the role they play in sustaining the Australian economy, this study is a timely and interesting study. Considering the significance of risk-management in enhancing corporate sustainability, this research will contribute to creating greater opportunities, facilitate wealth generation and foster sustained growth and prosperity of the Australian economy, through the integration of effective and sound risk-management practices, responsible social development and effective environmental management in the sector.

1.3 Genesis of this Research

The global financial crisis (GFC) of 2009/10 has pushed the need for proactive risk-management further into the limelight. The crisis shocked the entire business world with turbulent economic conditions and a global economic downturn. These events have brought the significance of risk-management to the forefront. There is a unanimous view amongst regulators that lapses in risk-management played a critical role in aggravating the
GFC. For instance, the president working group on financial regulation in March 2008 cited Kashyap’s (2010, p.16) assertion that:

“…..Risk-management weaknesses at some large US and European financial institutions are one of the principal underlying causes of the turmoil in financial markets. The regulatory policies including capital and disclosure requirements have failed to mitigate risk-management weaknesses”

Risk is an unavoidable element of everyday life and, as such, is an inevitable factor in industrial activities such as mining and oil & gas operations:

“….Extractive-sector operations and activities are inherently risky and complex. They involve a variety of environment, health and safety (EHS) and social issues that need to be carefully managed alongside geologic, political and economic risk factors. Worldwide, stakeholders are demanding higher levels of environmental and social performance from the industry. In addition to EHS concerns, a wide range of social issues, such as human rights, revenue management, ethics, governance and corruption, have become increasingly significant in terms of both perception and conduct of industry activities. As a result, extractive-sector firms are being exposed to a steady proliferation of policies, laws, guidelines and other norms applicable to their activities. Increased regulation has expanded the potential for legal, financial, reputational and other liabilities” (Wagner & Armstrong, 2010, p.140).

While companies in the Australian extractive-sector seek to manage and minimise risks inherent in these issues, the lack of effective risk-management practices and flexibility for change cripples their activities and operations (Deloitte, 2011; Roarty, 2010). The Australian extractive-sector makes significant contribution to the Australian economy and to the wellbeing of all Australians (Roarty, 2010). The operations and activities of firms in the sector evidently have significant potential to cause environmental harm and major accidents which could: injure or kill people and their livestock and other domestic animals; damage the environment and destroy wildlife; and/or cause loss of production and hence profit. Moreover, there is always some uncertainty about the probability of events and the extent of possible adverse impacts from them. The findings of this
research therefore aim to reduce the likelihood and impact of these events through investigating the role and contributions of risk-management in enhancing corporate sustainability of firms in the sector.

The researcher aims to achieve this through exploring the risk-management practices of 20 selected leading mining and oil & gas companies in Australia. In conducting this study, the researcher will take into consideration the following research issues: i) what are the risks of mining and oil & gas sectors? ii) Who are mostly affected? iii) What are the selected firms doing about these risks? iv) What has been done and what needs to be done? and v) Are these risks quantifiable in dollar (financial) terms?

1.4 Status of the Research Area and Statement of the Research Problem

In other to provide a well-rounded and holistic perspective and to enable the understanding of the primary theme of this study, an overview of the current status of the research area and research problems is taught necessary. As noted previously, the global financial crisis (GFC) in 2009 has awakened concerns about the traditional ways of managing risk. Multinational corporations across the various sectors of the world economy, which have long been proud of their sound risk-management practices and systems, were shocked by the suddenness, depth of harm, and persistence of the crisis—the GFC differed from prior financial crises the way a category 5 Saffir-Simpson cyclone differs from a tropical storm. High profile corporate governance failures such as Enron, Lehman Brothers, WorldCom, Parmalat, Author Andersen and others which occurred in the last couple of years has significantly shaken the global business landscape. This led to the introduction of legislation such as the Sarbanes Oxley Act in 2002, Dodd Frank-Wall Street Reform and Consumer Protection Act in 2010, New Rules of Evidence and other New Company Laws. Extant literature emphasises the failure of risk-management and by extension the agency
problem as the major cause of these corporate failures (Fetisov, 2009; Kirkpatrick 2009; Sadiq, Muthar, Oyebola & Abdulrasheed, 2011). In recent years, the attention of government, regulators, academics, researchers and professionals has largely been focused towards monitoring the overall corporate governance structures, financial controls and financial performance of organisations and institutions and less of the role and contribution of risk-management for sustainability of organisations (Azim, 2012).

As noted previously, exploration and production of hydrocarbons is a high-risk venture and decisions related to extractive-sector operations and activities is becoming very complex because of the high number of issues involved in the process. Today’s assessments of companies in the sector examine both their economic performance and their ability to manage diverse risks. Extant literature also discloses that many companies in the sector, particularly the smaller (junior) mining and oil & gas firms have acknowledged that there are inadequacies in their risk-management practices and systems and that they are incapable of foreseeing risk in their operations and strategies (Suslick, Schiozer & Rodriguez, 2009; Wagner & Armstrong, 2010).

Corporate managers in the extractive-sector are continuously facing important decisions regarding the allocation of scarce resources among investments that are characterized by substantial geological, operational and financial risk (for e.g. managers regularly employ decision analysis techniques to aid in making these decisions). In this instance, the extractive-sector is a classic case of uncertainty in decision-making and provides an ideal setting for the investigation of corporate risk-management practices and its effects on the firm’s performance and sustainability (Suslick, Schiozer & Rodriguez, 2009).

Extant literature further noted that minimising the risks that impact on extractive-sector firms operations and activities is a major challenge facing firms in the sector in recent times. Frequently, when extractive-sector firms engage in their operation, they strip the
land of all plant life, destroying animal habitat and threatening the region’s biodiversity (Lins & Horwitz, 2007). Numerous hazards arise during construction and operation of mining and oil & gas facilities not only for employees concerned, but also for the communities and the environment in general. These hazards result from the immediate exposure to mineral flows and processing from pollutants, the risk of major accidents and even from disasters arising from human errors. Uncontrolled risks can unfavourably reduce the profits of extractive-sector firms and therefore increase liabilities. There is there a need for firms in the sector to adequately identify practical ways of managing its own particular risk exposure (Lins & Horwitz, 2007; Suslick, Schiozer & Roriguez, 2009).

Recent research has further shown that risks in the extractive sector are on the increase and is driven by political and economic uncertainties and by the changing nature of extractive-sector firms operations (Deloitte, 2011; Roarty, 2010). In recent times, huge capital costs and ever-changing government policies and regulations have affected the sector thereby creating new risk-management challenges (Mitchell, Marcel & Mitchell, 2012; Oracle, 2011). Furthermore, many firms in the sector implement risk-management and compliance initiatives in response to a crisis or just to meet a legal deadline, rather than treating risk-management as an intrinsic part of their performance process (PWC, 2009). These and other issues have led to the formulation of the research questions of this study to examine how the selected companies can effectively manage their risks to remain sustainable.

While few studies have considered and predicted the individual effect of four key risks - financial, operational, strategic, and compliance (e.g. Ernst & Young, 2011) on extractive-sector firms’ sustainability and survival, there appears to be little consideration of joint effects of those four risks and/or their management. A few studies using qualitative approach (e.g. Hettihewa, 2016) considered the importance of risk-management at the extractive industry sectoral level for a sustainable economy while Andeobu, Hettihewa and

1.5 Research Gap and Significance of this Study

An important responsibility for extractive-sector firms is to adequately utilise their resources by implementing cost-effective risk-management practices. The economic landscape for extractive-sector firms will continue to be more complex, due to increasing economic uncertainties, intensifying industry competition, community pressures, regulation and the escalating battle for talents and resources. Extractive-sector firms must, therefore, look beyond the traditional risk-management approach and evolve their frameworks for the new and more aggressive risk landscape (PWC, 2012). However, due to the inherent hazards of extractive-sector activities and the complexity of their operations, perfect safety is not within the set of viable options. Regardless of how well extractive-sector activities and operations are designed, a significant potential for serious accidents will remain (Evan, Brereton & Joy, 2007). Projects in the extractive-sector are faced with diverse risks not commonly experienced or well understood by those in more traditional industries. Given such a unique challenge, traditional approaches to risk mitigation are insufficient for the sector. Notwithstanding major advances in risk planning and mitigation techniques, new capital projects in the sector continue to experience a high rate of failure
Based on the literature and case studies reviewed, the specific causes of failure of these projects can often be traced back to poor risk-management practices, especially during the planning phase (Schroeder & Jackson, 2007; Okoh & Haugen, 2013).

The Deepwater Horizon oil spill in the Gulf of Mexico in April 2010 brought an urgent focus on why extractive-sector firms need to effectively manage and control risks. BP was subject to world-wide criticism for the Gulf of Mexico major incident considered the largest marine oil spill in history. Within a very short period of time BP suffered extensive reputational damage. From the perspective of social and environmental responsibilities, there was a clear and obvious discontent from the society in the way BP dealt with the disaster. In the last 30 years, large accidents have occurred, on average, every two to three years associated with offshore and onshore extractive-sector operations. The magnitude of losses (suffered by the extractive industry and imposed on others) has been large and steadily increasing—e.g. an analysis by Marsh (2012) of insurance data of the 100 largest losses show that extractive-sector losses over a five-year period increased eight fold between 1972-2011 (Okoh & Haugen, 2013; RPS Energy, 2010). If the sector is to avoid severe and rising negative consequences of this pattern of major accidents, it must have an efficient process in place to effectively identify and manage risks (RPS Energy, 2010).

Global Corporations take risk-management very seriously and recent research found that risk-management is ranked by financial executives as one of their most significant corporate objectives. Based on its practical prominence, it is expected that the discipline of risk-management would attract more attention from researchers in finance and practitioners would consequently have a well developed body of wisdom, knowledge and understanding from which to draw in articulating risk-management policies, strategies and guidelines. However, such an expectation would only be partially right (Froot, Sacharfsstein & Stein...
1993; Rawls & Smithson, 1990). Mikes and Kaplan (2014) and Power (2009) reported that the discipline of risk-management is still evolving and that the current state of implementation of risk-management practices in organisations including those in the extractive sector is very immature.

By establishing the role risk-management plays in enhancing financial performance, stakeholder value and corporate sustainability, this research will fill the gap in the literature and will assist extractive-sector firms in turning risk-management into a true competitive advantage and to align risk-management with strategy, processes, people and technology to enhance financial performance, stakeholder value and remain sustainable. It is hoped that the findings of this research will enable the extractive-sector and in particular the selected companies to extend risk-management well beyond traditional financial and insurable hazards to encompass a wide variety of strategic, operational, environmental, compliance, reputational and information technology risks. This will serve as a means of identifying, managing and prioritizing risks across these organisations and linking them to value creation.

1.6 Motivations of this Research

The study of risk-management particularly in the high risk extractive industry has long fascinated the researcher and it is the inspiration behind this study (see Andeobu, Hettihewa & Wright (2015). The operating environment for many companies especially those in the extractive-sector have become very uncertain. Many managers, researchers and academics consent to this instability and risk-management is becoming an increasingly common term in organisations (Smallman, 1996). In spite of the advances and long rich history of the study of risk-management in organisations, many companies in the extractive-sector are still struggling to understand the risks they are exposed to and how best to control and
manage it (Suslick, Schiozer & Rodriguez, 2009). Given the significance of the contribution of the extractive-sector to the Australian economy, it is important to explore the contributions and role of risk-management in enhancing the sustainability and long-term survival of firms in this sector.

As commodity prices continue to test historic low levels, many firms in the sector struggle to survive (Deloitte, 2014). The industry faces a host of unresolved challenges, from falling demand for products to mounting stakeholder expectations and a lack of financing. At the same time, extractive-sector firms must contend with a range of issues, including the innovation obligation, shifting regulatory realities and the rising risks associated with operations (Deloitte, 2016). Swanepoel, Johnhson and The (2014, p.1) note that:

“….Companies in the sector are under pressure to increase productivity in other to offset current capital and operational cost escalations, as well as the impact of a volatile commodity market. As the global commodity boom slows down, extractive-sector companies are facing slow growth and expansion as capital projects are simply too expensive to execute. For companies in the sector to gain flexibility and create further value, the current situation calls for action focused on improved risk-management practices to enhance growth and long-term survival. This should encourage strong profitable growth despite the volatile market.”

Apart from price volatility, firms in the sector are exposed to other major issues impacting on their sustainability and long term survival.

“….Although the extractive-sector has the potential to significantly transform environments, communities and economies, such transformation on the other hand may manifest in conflicts or disputes between extractive-sector firms and local communities, or even result in complete breakdown of the company’s social licence to operate, with associated costs for the company, local communities, and the broader public” (Davis & Franks, 2011, p. 1).

Companies in the sector are constantly exposed to these issues and are now becoming more attuned to the importance of maintaining its corporate social responsibility distinct from its
social licence to operate. While these developments represent a significant shift of focus within the industry, implementing broad policy commitments into improved practices remains a major challenge (Brereton & Forbes, 2004). The Royal Dutch Shell environmental devastation in the Niger Delta in Nigeria between 1990-1995 among others and the subsequent crisis with the Ogoni people in the Niger Delta is a classic example of the level of impact extractive-sector firms operations can have on the communities and the environment. In addition, the Bhopal disaster in 1984 also called the Bhopal gas tragedy in India killing at least 3,800 people and causing significant morbidity and premature death for thousands is considered the worst environmental disaster in history. More recently, the 2015 dam collapse in Brazil managed by a subsidiary of one of the leading mining companies in Australia, killing 19 people, destroyed livelihood and villages and rendered many families homeless is another classic example of the need for effective risk-management practices in the sector. These disasters’ indicate the need for extractive-sector firms to pay special attention to community and environmental safety as well as preventive strategies to avoid similar incident in the future. For a comprehensive list of selected major accidents in the extractive sector across the globe from 1921-2015 (see Appendix 9)

Furthermore, the unique characteristics of the extractive industry make it vulnerable to many risks. Over the last decades the demand for natural resources has increased significantly and attempts to minimise the risks associated with the extractive-sector are essential (Hettihewa, 2016). Most of the activities of companies in the sector revolve around avoiding risks, controlling risk and mitigating the impact of risks on business operations, communities and the environment. It is now widely accepted within the sector that the various techniques of risk assessment and management can contribute greatly towards improving safety of complex operations and equipment (Evans, Brereton & Joy 2007). This study argues that for companies within the sector to continue to grow and
remain sustainable, they must be able to identify and effectively manage and control risks. Thus, effective risk-management is becoming increasingly important in the extractive-sector (Davis & Franks, 2011; Kemp, Owen, Gotzmann & Bond, 2011). Various stakeholder groups particularly the local communities, shareholders, investors and regulators are concerned about the risk-management practices of mining and oil & gas firms (Davis & Franks, 2011). When compared with other sectors extractive-sector firms face such high risk that risk-management is an essential tool for their sustainability and prosperity hence the need for this study. The findings of this study aim at answering the research questions proposed for this study.

1.7 Research Objectives

A primary objective of this research is to provide a feasible solution to the research questions provided in the preceding section. Using a mixed method (quantitative and qualitative) approach this study illustrates how effectively managing the four key risks of firms in the Australian extractive-sector can improved financial performance, stakeholder value and enhance corporate sustainability. A key deliverable of this research is to ascertain whether corporate sustainability can be enhanced through implementing sound and effective risk-management practices for:

1) Individuals, communities, investors, regulators, employees, shareholders, government and other stakeholders to continue to benefit from the activities and operations of companies in the sector through employment and wealth generation.

2) Companies in the sector to continue to grow, develop, be profitable and remain sustainable

3) The extractive-sector to continue to contribute significantly to the Australian economy
1.8 Research Questions

This study focuses on managing risks and enhancing corporate sustainability in the Australian extractive-sector. The primary research question in this study is:

*Can managing key risks enhance the ability of extractive-sector firms in Australia to create, boost, preserve and sustain financial performance and stakeholder value by enhancing corporate sustainability?*

The following subsidiary research questions will assist in answering the primary research question:

1) What are the selected firms’ policies on risk-management and are these policies seen to enhance financial performance, stakeholder value and corporate sustainability?

2) How do the selected exemplar firms perceive measure and effectively manage and control their key risks?

3) What similarities and differences exist in the risk-management practices (key risks) of the selected exemplar firms?

4) Do extractive-sector firms and its managers’ characteristics influence the selection of risk-management practices employed?

5) What formal and informal loss prevention measures and control are actually being undertaken by the selected exemplar firms in managing key risks?

6) What are the financial risks the selected exemplar firms faced and continue to face and what is the relationship between financial risk and other key operating and non-operating risks?
7) What is the empirical association between risk-management practices employed, corporate sustainability and long-term survival of firms in the extractive-sector?

8) How do the selected exemplar firms improve the safety consciousness, educate and communicate risk awareness to their employees and communities?

9) What is the impact of risk-management practices on stakeholder value and corporate sustainability of firms in the extractive-sector?

10) How do the selected exemplar firms engage in stakeholder relations management in ways that will help to identify key areas of risks and opportunities to improve operating and financial performance?

1.9 Research Approach and Methods: An Overview

In other to achieve the objectives of this study and to adequately answer the research questions, this study adopts a pragmatism paradigm with a mixed method approach. In this research, a mixed-method (quantitative and qualitative) approach is employed to explore the employees (managers) views and perceptions and to examine the way managers’ feel, perceive and think about the risk-management practices and corporate sustainability in the selected companies. Mixing quantitative and qualitative techniques in this study also provides a broader perspective to the research questions and complements each other. As explained in chapter 7 (Research Approach and Methods), this study is conducted in two phases:

In phase 1, primary data was collected through the means of a questionnaire. The use of a questionnaire as a research instrument to collect data enables the researcher to reach a significant number of employees of the selected companies.
In Phase 2, semi-structured interviews were conducted with top executives of the selected companies. The purpose of the interviews was to validate the responses from the questionnaires. The interviews process also provided an opportunity to gain a deeper understanding of the various aspects of the phenomenon being examined. The interviews were conducted during working hours and were very helpful in providing the needed information about the risk-management practices and corporate sustainability strategies of the selected companies.

Data collected from the questionnaires and interviews were consolidated and subjected to a triangulation of methods for further analysis. Quantitative data from the questionnaires were analysed using statistics for social science package (SPSS) software. Descriptive and inferential statistics were employed in quantifying and estimating the collected data. The qualitative data from the interviews were analysed using content analysis. The research approach adopted in this study proved helpful in analysing the responses from the sample population consisting of the employees’ of the selected companies. As this research is exploratory in nature, it was intended to create a foundation from which further and similar studies can be carried out. A detailed and comprehensive description of justification of the research paradigm and the research methodology and methods adopted in this study is discussed in chapter 7.

Figure 1-1 presents the study design which illustrates the organisation, structure and context of the study. This study is conducted in the Australian context which is a classic example of a developed economy. The findings of this study are presented in chapter 10 consistent with the conceptual framework and existing literature.
1.10 Scope and Key Assumptions of this Thesis

The research in this thesis will be limited to the Australian extractive-sector. Furthermore, the study will only be extended to the top 20 selected diversified mining and oil & gas companies. Given the nature and scope of risks and risk-management, this study will only focus on the “four key” risks of the extractive-sector – financial, operational, strategic and compliance in the context of the selected companies. Particular attention is given to
financial risk-management as financial risk is intertwined with other key risks. A study of all the diverse risks associated with the extractive-sector is beyond the scope of this study.

1.11 Structure of this Thesis

A twelve-chapter structural framework is adopted for this current thesis. Figure 1-2 below presents the chapter outline and the interrelationships between these twelve chapters from the introduction to the problem statement through to the findings, conclusion and the formulation of a risk-management model for extractive-sector firms. Brief explanations of the chapters are presented below:

**Chapter 1** – Introduces the research topic, research problems, motivation and significance of this study. The chapter also articulates the research questions in the context of the study. In addition, the chapter explains the current status of the research area, research objectives and provides a brief overview of the research approach and methods.

**Chapter 2** - presents the background of Australia in the context of this research along with the geographical, political, economic and socio-cultural policies relevant to this study. This chapter also provides an extensive literature on the —mining industry, the oil & gas industry and the liquefied natural gas (LNG) industry. It highlights the history, trends, developments, structure, performance, regulatory framework and challenges of each of the industry. An explanation of the economic contribution of the extractive-sector to the Australian economy is also discussed.

**Chapter 3** – reviews the existing literature on risk-management, identifies the gaps within the literature and develops the conceptual framework for this research. As an integral part of this chapter, the fundamental concepts that are related to the study are described, in other that the reader may be provided with the foundation on which this study is established.
Chapter 4 - also reviews prior literature on corporate sustainability. An explanation of what corporate sustainability means for this research, as well as the roles and functions are discussed.

Chapter 5 - reviews the risk-management and corporate sustainability literature. It explains the relationships between risk-management and corporate sustainability as well as the benefits of corporate sustainability adopted practices.

Chapter 6 – discusses the theoretical perspective and foundation of this study. It also explains the role of corporate governance in dealing with agency problem, stakeholder theory and contingency theory as well as the conceptual framework.

Chapter 7 - provides the detailed description of the research design. It describes the pragmatism methodology and epistemology that underpin the research strategy. This chapter also addresses the research approach, strategy, sampling method, target population and the various methods used to collect data. The rationale for choosing a mixed method of both quantitative and qualitative research methods, empirical methods and variable measurement is discussed. This two fold approach is undertaken in other to provide the desirable depth of analysis required to answer the research questions. The techniques and procedures used to analyse data collected as well as ethical considerations are explained.

Chapter 8 – presents and discusses the results of the questionnaire survey. The reporting of the findings of this chapter is consistent with overall conceptual framework and research model which are underpinned by the pragmatism methodology. The chapter also discusses the empirical evidence from the study in terms of the relationships between the risk-management practices and corporate sustainability of the selected firms. Survey data was analysed using both descriptive and inferential statistics. Descriptive analysis included – mean, median, mode, standard deviation, minimum and maximum values while inferential
analysis included – correlation analysis, analysis of variance (ANOVA), regression analysis and independent sample t-test.

**Chapter 9** – presents and discusses the results from the interviews. The reporting of the qualitative data is in line with the overall research model and is used to validate and complement the findings from the questionnaires. The chapter presents a detailed analysis and discussion of the risk-management practices of the selected companies using a content analysis approach.

**Chapter 10** – discusses the results of the findings and incorporates both theoretical and empirical evidence from the study. It tests the hypotheses in the study drawing from the findings from the quantitative and qualitative analysis. In addition this chapter compares the results of the study’s findings with reference to previous scientific research in the literature concerning risk-management practices in organisations.

**Chapter 11** – presents a proposed structured risk-management framework and model for firms in the extractive-sector. The model comprise of a set of interrelated components in the management of extractive-sector firms key risks namely risk governance, the risk policy, risk-management process, tools and technology and continuous improvement. The model is expected to help improve the risk-management practices of firms in the sector. The model is based on the review of prior studies on risk-management practices in organisations and the findings from this study.

**Chapter 12** – concludes this thesis by presenting a summary of the study’s findings, implications of the findings, the contributions of this research to knowledge both in theory and in practice of risk-management, the limitations of the research and recommendations for future research.
1.12 Chapter Summary

This chapter has established the foundation and provides a road map for this thesis. It has provided the context for the research both in terms of reasoning and layout. More specifically, the chapter has identified the research objectives, the research questions based on the research problems identified. Furthermore, the chapter has outlined the significance of the study and the research approach adopted in this study. The concluding part of this chapter has discussed the remaining chapters of this thesis along with a chapter outline (see Figure 1-2) illustrating the chapter interrelationships. The next chapter examines in detail the Australian extractive-sector and the Australian economy.
Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil & Gas Firms in Australia

Volume 2

Appendices
References

Lynda Nwanyibunwa Andeobu

This thesis is submitted in total fulfilment of the requirements for the degree of Doctor of Philosophy

Federation Business School
Federation University Australia
P. O. Box 663
University Drive, Mount Helen
Ballarat, Victoria 3353
Australia

Submitted in October 2016
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Volume 2

References

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Appendix 1: HREC Approval

Approval

Human Research Ethics Committee

<table>
<thead>
<tr>
<th>Principal Researcher:</th>
<th>Samantha Hettihewa</th>
</tr>
</thead>
</table>
| Other/Student Researcher/s: | Raveendranath Nayak  
C. S. Wright  
Lynda Andeobu |
| School/Section:             | Faculty of Business |
| Project Number:             | B14-123            |
| Project Title:              | Managing risk and enhancing corporate sustainability in the Australian extractive sector: An exploratory study of leading mining and oil & gas firms in Australia. |
| For the period:             | 23/09/2014 to 20/02/2016 |

Please quote the Project No. in all correspondence regarding this application.

REPORTS TO HREC:

An annual report for this project must be submitted to the Ethics Officer on:  
23 September 2015

A final report for this project must be submitted to the Ethics Officer on:  
20 March 2016

These report forms can be found at:  

Fiona Koop

Ethics Officer  
23 September 2014
Dear Sir/Madam,

You are invited to participate in a PhD research study being undertaken by Lynda Andeobu, under the supervision of Dr. Samanthala Hettihewa, Dr. Reveendranath Nayak at Federation Business School, Federation University Australia and Professor Chris Wright. The title of the project is: Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil & Gas Firms in Australia.

The aim of this research is to critically investigate how financial performance, stakeholder value and corporate sustainability can be enhanced through integrating cost-effective risk management practices into business processes among leading mining, oil and gas firms in Australia. This study will contribute to the literature through facilitating the efficient integration of the values of risk management and corporate sustainability into the operational and strategic levels of extractive firms operations. This study will also provide an efficient way of determining the effectiveness of risk management practices in the sector. The findings of this study intend to provide future benefits by introducing a new era with essential reforms, policies and best practices into corporate risk management that may be applied to the extractive sector and across other sectors.

Approval to participate in this survey has been granted by your organisation and you have been randomly selected from a sample of employees to participate in this study. The questionnaire has been considered and approved by your firm’s senior management. Your participation in this research will involve completing the enclosed questionnaire which will take about 15-25 minutes to complete. If you are willing to participate, please complete the attached questionnaire and return using the enclosed postage-paid envelope within two weeks from the date of receipt of this letter.

Please note that your participation in this research is completely voluntary and if you do not wish to participate, you are not obliged to do so. All responses to the questionnaire are anonymous and confidential and you will not be identified as a respondent. The postage-paid envelope provided is coded according to the company, branch office and location to enable the researchers track non-respondents. However, upon receipt of the questionnaire, it will be removed and immediately separated from the envelope. The questionnaire and the envelope will then not be able to be linked.
in anyway. The returns from the survey will be recorded on a database using the coded envelop only. The envelope will be shredded and destroyed immediately to ensure confidentiality.

All data from the research will be stored securely by the principal researcher. You should however note that the confidentiality of information that you provide is subject to any legal limitations. The research data will only be accessed by the researchers named above. Data collected from the questionnaires will be destroyed after 5 years. It will be impossible to withdraw consent once your questionnaire is returned by mail and information/data is processed. Once data has been processed it is unable to be identified.

In the unlikely event that you feel any distress, Lifeline Counsellors have a 24-hour telephone crisis support services, and can be reached on 13 11 14

If you would like a summary of the findings upon completion of this project, please contact the principal researcher by the email provided below.

If you have any questions or concerns about completing the questionnaire, please do not hesitate to contact the principal researcher on +61 3 5327 9158 or s.hettihewa@federation.edu.au

Thank you in anticipation of your valuable participation. Your cooperation in this study is greatly appreciated.

Sincerely,

Dr. Samanthala Hettihewa
Appendix 3: Plain Language Statement - Interview

**Plain Language Information Statement**

**FEDERATION BUSINESS SCHOOL**

<table>
<thead>
<tr>
<th>PROJECT TITLE:</th>
<th>Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil &amp; Gas Firms in Australia – A PhD Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRINCIPAL RESEARCHER:</td>
<td>Dr. Samanthala Hettihewa</td>
</tr>
<tr>
<td>OTHER/STUDENT RESEARCHERS:</td>
<td>Professor Chris Wright, Dr. Raveendranath Nayak and Ms Lynda Andeobu</td>
</tr>
</tbody>
</table>

Dear Sir/Madam,

You are invited to participate in a PhD research study being undertaken by Lynda Andeobu, under the supervision of Dr. Samanthala Hettihewa, Dr. Reveendranath Nayak at Federation Business School, Federation University, Australia and Professor Chris Wright. The title of the project is: **Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil & Gas Firms in Australia.**

The aim of this research is to critically investigate how financial performance, stakeholder value and corporate sustainability can be enhanced through integrating cost-effective risk management practices into business processes among leading mining, oil and gas firms in Australia. This study will contribute to the literature through facilitating the efficient integration of the values of risk management and corporate sustainability into the operational and strategic levels of extractive firms operations. This study will also provide an efficient way of determining the effectiveness of risk management practices in the sector. The findings of this study intend to provide future benefits by introducing a new era with essential reforms, policies and best practices into corporate risk management that may be applied to the extractive sector and across other sectors.

Approval to participate in this interview has been granted by your organisation and you have been selected from a sample of employees (senior executives only) to participate in this study. The interview questions has been considered and approved by your firm’s senior management. Your involvement in this study would be to participate in the individual interviews which will take 35-45 minutes of your time. This interview will take place at your company’s premises at your convenience. The interview will be conducted by the PhD candidate Ms Lynda Andeobu.

Please note that your participation in the interview is completely voluntary and if you do not wish to participate, you are not obliged to do so. All responses to the interviews are anonymous and confidential. The interview will be audio recorded with your consent and subsequently transcribed. Once the interview is completed, your anonymity is preserved as the identity of the participant in the interview cannot be linked in any way to the processed data.

All data from the research will be stored securely by the principal researcher. You should however note that the confidentiality of information that you provide is subject to any legal limitations. The
research data will only be accessed by the researchers named above. Data collected from the interviewees will be destroyed after 5 years. Please note that it will be impossible to withdraw consent to participate once the interview is conducted and data has been processed. Once data has been processed it is unable to be identified.

In the unlikely event that you feel any distress, Lifeline Counsellors have a 24-hour telephone crisis support services, and can be reached on 13 11 14

If you would like a summary of the findings upon completion of this project, please contact the principal researcher by the email provided below.

If you have any questions or concerns about the interview schedule, please do not hesitate to contact the principal researcher on +61 3 5327 9158 or s.hettihewa@federation.edu.au

Thank you in anticipation of your valuable participation. Your cooperation in this study is greatly appreciated.

Sincerely,

Dr. Samanthala Hettihewa

If you have any questions, or you would like further information regarding the project titled Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil & Gas Firms in Australia, please contact the Principal Researcher – Dr. Samanthala Hettihewa of Federation Business School: Telephone +61 3 5327 9158, Email: s.hettihewa@federation.edu.au

Should you (i.e. the participant) have any concerns about the ethical conduct of this research project, please contact the Federation University Ethics Officer, Research Services, Federation University Australia, PO Box 663, Mt Helen VIC 3353. Telephone: (03) 5327 9765, Email: research.ethics@federation.edu.au
Appendix 4: Consent Form

Consent Form

FEDERATION BUSINESS SCHOOL

<table>
<thead>
<tr>
<th>PROJECT TITLE:</th>
<th>Managing Risk and Enhancing Corporate Sustainability in the Australian Extractive Sector: An Exploratory Study of Leading Mining and Oil &amp; Gas Firms in Australia – A PhD Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRINCIPAL RESEARCHER:</td>
<td>Dr. Samanthala Hettihewa</td>
</tr>
<tr>
<td>OTHER/STUDENT RESEARCHERS:</td>
<td>Professor Chris Wright, Dr. Raveendranath Nayak and Ms Lynda Andeobu</td>
</tr>
</tbody>
</table>

Dear Sir/Madam,

Consent – Please complete the following information:

I hereby consent to participate as a subject in the above research study.

The research program in which I am being asked to participate has been explained fully to me, verbally and in writing, and any matters on which I have sought information have been answered to my satisfaction.

I understand that:

- all information I provide (including questionnaires) will be treated with the strictest confidence and data will be stored separately from any listing that includes my name and address.
- My involvement in the project is voluntary and I am free to withdraw at any time or any unprocessed data previously supplied.
- the interview will be audio taped.
- the confidentiality of information that I provide is subject to legal limitations.
- aggregated results will be used for research purposes and may be reported in scientific and academic journals.
- I am free to withdraw my consent at any time during the study in which event my participation in the research study will immediately cease and any information obtained from it will not be used.
- once information has been aggregated it is unable to be identified, and from this point it is not possible to withdraw consent to participate.

SIGNATURE: ........................................ DATE: ........................................
Appendix 5: Survey Questionnaire

Survey Questionnaire

RISK MANAGEMENT AND CORPORATE SUSTAINABILITY QUESTIONNAIRE

The following questionnaire is based on the research questions developed for this study. The questionnaire is part of the general write-up for a Ph.D. thesis at Federation Business School, Federation University, Australia. The questionnaire contains questions that requires your responses and should take about 15-25 minutes to complete. Your answers are completely anonymous.

PART A: GENERAL INFORMATION

Section 1: About your firm

Please answer the following questions about your firm. Circle the appropriate number.

A1. How significant are the following corporate objectives to your firm?

<table>
<thead>
<tr>
<th>1 = irrelevant</th>
<th>2 = Insignificant</th>
<th>3 = Minor</th>
<th>4= Somewhat Significant</th>
<th>5 = Very Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>To maximise the wealth of shareholders</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ii</td>
<td>To maximise the wealth of all stakeholders</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iii</td>
<td>To maximise profit</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iv</td>
<td>To maintain market position</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>v</td>
<td>To maintain continuity and remain sustainable</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>vi</td>
<td>To control cost, productivity and efficiency</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>vii</td>
<td>To maintain excellent safety record</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A2. How significant are the following stakeholders to your firm?

| i  | Shareholders | 1 | 2 | 3 | 4 | 5 |
| ii | Customers | 1 | 2 | 3 | 4 | 5 |
| iii | Communities | 1 | 2 | 3 | 4 | 5 |
| iv | Suppliers | 1 | 2 | 3 | 4 | 5 |
| v  | Investors | 1 | 2 | 3 | 4 | 5 |
| vi | Financiers | 1 | 2 | 3 | 4 | 5 |
| vii | Companies | 1 | 2 | 3 | 4 | 5 |
| viii | Government | 1 | 2 | 3 | 4 | 5 |
| ix  | Employees | 1 | 2 | 3 | 4 | 5 |

A3. Assess the relative impact of the four key risks on the overall performance of your firm.

<table>
<thead>
<tr>
<th>1= None</th>
<th>2 = Low</th>
<th>3 = Moderate</th>
<th>4 = High</th>
<th>5 = Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Financial risk</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ii</td>
<td>Operational risk</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iii</td>
<td>Strategic risk</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iv</td>
<td>Compliance risk</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Section 2: Respondent to this Questionnaire

The following questions refer to the respondent to this questionnaire. Please circle the appropriate number.

A4. In what department or section of your organisation do you work?

<table>
<thead>
<tr>
<th>Department</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration &amp; Production</td>
<td>1</td>
</tr>
<tr>
<td>Human Resources &amp; Administration</td>
<td>2</td>
</tr>
<tr>
<td>Finance and Accounts</td>
<td>3</td>
</tr>
<tr>
<td>Information Technology</td>
<td>4</td>
</tr>
<tr>
<td>Construction &amp; Shipping</td>
<td>5</td>
</tr>
<tr>
<td>Engineering &amp; Projects</td>
<td>6</td>
</tr>
<tr>
<td>Business Development</td>
<td>7</td>
</tr>
<tr>
<td>Health, Safety, Environment &amp; Communities</td>
<td>8</td>
</tr>
<tr>
<td>Risk &amp; Compliance</td>
<td>9</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>10</td>
</tr>
</tbody>
</table>

A5. How long have you been in the employment of your company?

<table>
<thead>
<tr>
<th>Duration</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 years</td>
<td>1</td>
</tr>
<tr>
<td>5 – 10 years</td>
<td>2</td>
</tr>
<tr>
<td>10 – 15 years</td>
<td>3</td>
</tr>
<tr>
<td>16 years &amp; above</td>
<td>4</td>
</tr>
</tbody>
</table>

A6. What is your employment category?

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>1</td>
</tr>
<tr>
<td>Temporary</td>
<td>2</td>
</tr>
<tr>
<td>Contract</td>
<td>3</td>
</tr>
<tr>
<td>Casual</td>
<td>4</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>5</td>
</tr>
</tbody>
</table>

A7. Age group of the respondents (years) (Please circle one box only)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 29</td>
<td>1</td>
</tr>
<tr>
<td>30 - 39</td>
<td>2</td>
</tr>
<tr>
<td>40 - 49</td>
<td>3</td>
</tr>
<tr>
<td>16 years &amp; above</td>
<td>4</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>5</td>
</tr>
</tbody>
</table>

A8. Respondent’s gender is:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
</tr>
</tbody>
</table>

A9. What is your highest level of education?

<table>
<thead>
<tr>
<th>Level</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ high school</td>
<td>1</td>
</tr>
<tr>
<td>High school or equivalent</td>
<td>2</td>
</tr>
<tr>
<td>Certificate (≤ 2 year program)</td>
<td>3</td>
</tr>
<tr>
<td>Diploma (≥ 2 year program)</td>
<td>4</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>5</td>
</tr>
<tr>
<td>Higher (describe)</td>
<td>6</td>
</tr>
<tr>
<td>Other (explain)</td>
<td>7</td>
</tr>
</tbody>
</table>

A10. How many years have you spent management?

<table>
<thead>
<tr>
<th>Years</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1</td>
<td>1</td>
</tr>
<tr>
<td>1.00 – 4.99</td>
<td>2</td>
</tr>
<tr>
<td>5.00 – 9.99</td>
<td>3</td>
</tr>
<tr>
<td>10.00 – 14.99</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 15</td>
<td>5</td>
</tr>
</tbody>
</table>
**Section 1: Risk management practices of your firm.**

The following questions refer to the risk management practices of your firm. Please circle the appropriate number.

<table>
<thead>
<tr>
<th></th>
<th>1 = YES</th>
<th>2 = NO</th>
<th>In your opinion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>Does your company identify the sources of risk and develop appropriate management responses?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B2</td>
<td>Has your firm designed and formulated an effective risk management policy?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B3</td>
<td>Are these policies seen to enhance financial performance, stakeholder value and corporate sustainability?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B4</td>
<td>Does your firm’s risk management approach reflect the unique challenges and risks faced within the sector?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B5</td>
<td>Does your firm allocate time, budget and resources for a risk management plan and framework?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B6</td>
<td>Does your firm use a risk matrix approach to prioritize and respond to risk accurately?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B7</td>
<td>Has your firm developed and implemented a desired risk management culture?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B8</td>
<td>Does your firm bring different areas of expertise together in analysing, monitoring and responding to risk?</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

B9 Rank (5 highest to 1 lowest) which of the following risk management employed by your firm is making the most significant contribution to achievement of corporate objectives?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Financial risk management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii</td>
<td>Operational risk management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td>Strategic risk management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td>Compliance risk management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v</td>
<td>Other (Specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B10 Rank (5 highest to 1 lowest) where in your organisation can managing risks effectively add the most value?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipelines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction &amp; Shipping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Resources/Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer / IT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance &amp; Investments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering &amp; Projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploration &amp; Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 2: Four key risk categories - financial, operational, strategic and compliance

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree  2 = Disagree  3 = Neutral  4 = Agree  5 = Strongly agree

A. Financial Risk

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11</td>
<td>The business activities and operations of your company are exposed to financial risk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C12</td>
<td>Financial risk is an integral part of your firm’s business and project operations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C13</td>
<td>Financial risk has a significant impact on your company’s share price behaviour.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C14</td>
<td>Cash flow volatility, commodity prices, foreign exchange rates and interest rates impacts on your company’s business activities and operations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C15</td>
<td>Derivatives are used by your company to hedge and mitigate the impact of financial risk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C16</td>
<td>Financial risk of your organisation can be effectively managed through analysis, implementation of policies and evaluation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

B. Operational Risk

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C18</td>
<td>The business and project operations of your company are exposed to operational risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C19</td>
<td>Managing and controlling operational risk is an integral part of business and project activities of your firm.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C20</td>
<td>There is a broad approach to managing and controlling operational risk in your firm.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C21</td>
<td>Appropriate incentives are continuously provided by your firm to lessen their exposure to unwanted operational risks and to continue to expand their commitment towards operational risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C22</td>
<td>There are appropriate indicators that spot problems on operational risks in their earliest stages so that preventive actions can be taken.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C23</td>
<td>The operational risk management processes and strategies of your firm are designed to consume resources efficiently.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C24</td>
<td>Reducing cost and increasing revenue is a significant aspect of your firm’s operational risk controls.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

C. Strategic Risk

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C25</td>
<td>The business and project operations of your firm are exposed to strategic risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C26</td>
<td>There is a good understanding of your firm’s strategic risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C27</td>
<td>Strategic risks have significant impact on your firm’s business and project operations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C28</td>
<td>Strategic risk management processes and techniques of your firm are based on established practices and benchmarks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C29</td>
<td>Strategic risk management techniques of your firm are important in identifying, assessing and managing other key risk exposures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C30</td>
<td>Managing risk and strategy setting activities are often viewed as separate and distinct functions in your firm.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
## D. Regulatory or Compliance Risk

<table>
<thead>
<tr>
<th>C31</th>
<th>The business and project operations of your firm are exposed to compliance risks.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C32</td>
<td>The principles and concepts of your firm’s compliance risk management practices are clear and well understood.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C33</td>
<td>Compliance risk is an integral part of your firm’s business, project and decision making process.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C34</td>
<td>Compliance risk is central to your firm’s viability, direction, ongoing health and safety of individuals, communities and the protection of the environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C35</td>
<td>Compliance risk management solutions are used to mitigate the impact of your firm’s operations on communities and the environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C36</td>
<td>Compliance risk in your firm is based on cost-effective risk management practices.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Section 3: Financial risk and the relationship with other key risks

The following statements refer to the relationship between financial risk and other key operating and non-operating risks in your firm. Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th>1 = Not at all</th>
<th>2 = Very Weak</th>
<th>3 = Weak</th>
<th>4 = Strong</th>
<th>5 = Very Strong</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>D37</th>
<th>There is a relationship between financial risk and other key operating and non-operating risks in your firm.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>D38</td>
<td>Managing and controlling financial, operating, moral hazard and other non-financial risks are significant aspects of your firm’s decision process.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>D39</td>
<td>Identifying, understanding and applying interrelationships among key risks are critical to your firm’s business and project operations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Section 4: Managing and controlling key risks

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>E40</th>
<th>There is a good understanding of the key risks facing your firm and their likely implications on its operations.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>E41</td>
<td>There are adequate measures to identify, assess, and control key risks in your firm to facilitate good operational and project performance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E42</td>
<td>There are standards and frameworks in place for managing and controlling your firm’s key risks – financial, operational, strategic and compliance risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E43</td>
<td>Standards and frameworks are communicated to and understood by those required to use them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E44</td>
<td>Your company has developed and implemented mitigation plans with respect of its keys risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E45</td>
<td>Your company has a portfolio view of its key risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E46</td>
<td>Stakeholders’ interests are considered in managing and controlling key risks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E47</td>
<td>Application of statistical analysis to historic loss experience is used as a method of evaluating key risk exposures in your firm.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E48</td>
<td>Analysis and evaluation of key risks are performed on a regular basis on your firm’s business and project operation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E49</td>
<td>Your firms approach to risk management enables risk to be balanced against appropriate rewards and reflects its vision, values and corporate objectives.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
E50. How does your firm finance its risks? (Please circle the appropriate number)

Does your firm use risk retention as a method to finance its risks?

Does your firm finance its risks using the current cost of funding?

Does your firm finance its risks through advance or contingency funding?

Does your firm finance its risks through borrowing or loan finance?

Section 5: Risk Analysis and Evaluation

E51. How frequently does your firm use the following risk analysis and evaluation techniques in managing and controlling key risks? Please circle the appropriate number.

<table>
<thead>
<tr>
<th>Technique</th>
<th>1 = Never</th>
<th>2 = Rarely</th>
<th>3 = Occasionally</th>
<th>4 = Regularly</th>
<th>5 = Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>i  Brainstorming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii Sensitivity Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii Probability Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv Delphi Method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v  Monte Carlo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi Decision Theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii Scenario Approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii Utility Theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ix Simulation Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x  Fault Tree Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 6: Implementation

E52. Do you agree or disagree with the following statements on implementation of key risks in your firm? Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation is considered a significant phase in your firm’s risk management process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The implementation plan is developed in collaboration with employees, communities and other stakeholders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The implementation processes and procedures are evaluated and reviewed periodically.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The implementation plan adheres to the current risk management standards and frameworks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top level management consistently monitor and review the implementation process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The implementation plan clearly considers financial and non-financial risks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective actions are taken when necessary and if required during the implementation process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The implementation phase is adequately scrutinised by examining processes, techniques and strategies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 7: Loss prevention measures and control of key risks

F53. Please answer the following questions on loss prevention measures and control of key risks in your firm. Circle the appropriate number.

1 = YES  2 = NO  in your opinion:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your firm use on-site physical inspection of upstream projects and operations to identify key risk exposures?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Does your firm use analysis of flow chart to illustrate financial and non-financial operational processes as a method to identify key risk exposures?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Does your firm use examination of financial statements, sustainability reports and other internal documentation to identify key risk exposures?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Does your firm use experts from within and outside the country to identify and assess key risk exposures?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Does your firm review the results from surveys and questionnaires from operations to identify key risk exposures?</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

F54. What loss prevention measures are undertaken by your firm? Rank them in the order of importance (the lowest rank being “e” and the highest rank being “a”) and how often is it done.

<table>
<thead>
<tr>
<th>Importance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Avoidance</td>
<td>a b c d e</td>
</tr>
<tr>
<td>Risk Retention</td>
<td>a b c d e</td>
</tr>
<tr>
<td>Risk Reduction</td>
<td>a b c d e</td>
</tr>
<tr>
<td>Risk Financing (Insurance)</td>
<td>a b c d e</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>a b c d e</td>
</tr>
</tbody>
</table>

F55. Please rank the following listed ways by which your firm measures its key risk (the lowest rank being 1 and the highest rank being 5).

<table>
<thead>
<tr>
<th>Method</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>By Reviewing past risks</td>
<td>1</td>
<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>By Assessing current risks in your firm</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>By Predicting future risks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>By Monitoring risks changes</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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</tr>
<tr>
<td>Other (Specify)</td>
<td>1</td>
<td>2</td>
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<td>5</td>
</tr>
</tbody>
</table>

F56. Rank (5 highest to 1 lowest) where in your organisation can loss prevention and control measures have its greatest impact?

<table>
<thead>
<tr>
<th>Department</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipelines</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Construction &amp; Shipping</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Computer / IT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Human Resources/Administration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Finance &amp; Investments</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Engineering &amp; Projects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exploration &amp; Production</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Business Development</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Do you agree or disagree with the following statements on loss prevention measures and control of key risks in your firm? Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th></th>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>F57</td>
<td>Continuous improvement is applied to managing and controlling key risks in your firm.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F58</td>
<td>There is a commitment to resilience – building capabilities when things are going well so that recovery can be more rapid when unexpected events occur.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F59</td>
<td>There are clear roles and responsibilities for those managing and controlling key risks.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>F60</td>
<td>There are contingency plans for mitigating both financial and non-financial risks.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
</tbody>
</table>

F61. a) Please indicate how satisfied

<table>
<thead>
<tr>
<th></th>
<th>1 = Very unsatisfied</th>
<th>2 = Unsatisfied</th>
<th>3 = Neutral</th>
<th>4 = Satisfied</th>
<th>5 = Very Satisfied</th>
<th>6 = N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>you are with your firm’s risk management efforts on:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Financial performance</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Stakeholder value creation</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Maximising share value</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

b) Please indicate how satisfied

<table>
<thead>
<tr>
<th></th>
<th>1 = Very unsatisfied</th>
<th>2 = Unsatisfied</th>
<th>3 = Neutral</th>
<th>4 = Satisfied</th>
<th>5 = Very Satisfied</th>
<th>6 = N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>you are with your firm’s risk management efforts on:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Good housekeeping</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Environmental management</td>
<td>1 2 3 4 5 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Community relations</td>
<td>1 2 3 4 5 6</td>
<td></td>
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</tbody>
</table>

Section 8: Improving safety and risk awareness

Please read the following statements on improving safety and risk awareness in your firm and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th></th>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>G62</td>
<td>Roles and responsibilities for occupational and process safety are defined.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G63</td>
<td>There are systems and procedures in place to provide quality assurance on safety (health, safety and environment).</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G64</td>
<td>Key risks are discussed in your firm’s business strategy and operational planning.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G65</td>
<td>There are training programs in place to support learning and risk awareness.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G66</td>
<td>Knowledge sharing, communication and the risk management practices of your firm are continuously improved.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G67</td>
<td>The risk management processes and practices of your firm are carried out in collaboration with stakeholders.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Section 1: Risk management and corporate sustainability**

The following statements refer to the relationship between risk management and corporate sustainability of your firm. Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th></th>
<th>1 = Not at all</th>
<th>2 = Very weak</th>
<th>3 = Weak</th>
<th>4 = Strong</th>
<th>5 = Very strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>H68</td>
<td>There is a relationship between risk management and corporate sustainability of your firm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H69</td>
<td>Your company integrates risk management and corporate sustainability into its business strategy and planning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H70</td>
<td>Corporate sustainability programs are used to balance opportunities and risks so as to enhance financial performance and stakeholder value.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H71</td>
<td>The risk management processes and practices of your firm incorporate a robust understanding of corporate sustainability issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H72</td>
<td>Risk Management and corporate sustainability strategies are continuously monitored.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H73</td>
<td>Corporate sustainability programs of your firm methodically address strategic, operational, compliance, financial and governance issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H74</td>
<td>Cost effective risk management practices can enhance long term sustainability and survival of your firm.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Section 2: Risks, opportunities and corporate sustainability**

Please read the following statements on risks, opportunities and corporate sustainability of your firm and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th></th>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>H75</td>
<td>Changing business model, stakeholder demands and expectation as well as evolving regulatory requirements are factored into business strategies and operations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H76</td>
<td>Your company creates, protects, preserves and enhances stakeholder value through management of corporate sustainability threats and opportunities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H77</td>
<td>Stakeholder-based approach is incorporated into decision making process and activities in pursuit of corporate sustainability to achieve corporate objectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H78</td>
<td>Corporate sustainability policies and strategies of your firm are designed to have a broad impact on financial performance and stakeholder value creation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H79</td>
<td>New policies and strategies are used to improve risk management and corporate sustainability to support financial performance and stakeholder value in your firm.</td>
<td></td>
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</tr>
</tbody>
</table>
Appendix 6: Interview Schedule

INTERVIEW SCHEDULE

Section 1

Stakeholder relations management

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree  2 = Disagree  3 = Neutral  4 = Agree  5 = Strongly agree

1) Your firm engages in stakeholder relation management. 
2) Stakeholder relation management is conducted in ways that identify key areas of risks and opportunities. 
3) Your firm collaborates with its employees, customers, suppliers, shareholders and communities to improve operational and financial performance.

Question 1a: How does your firm engage in stakeholder relations management in ways that will help to identify key areas of risks and opportunities to improve operating and financial performance?

Question 1b: How does your firm seek to understand stakeholders’ demands, priorities and expectations at corporate and project levels and are these issues factored into core decision making processes?

Section 2

Policies on risk management

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree  2 = Disagree  3 = Neutral  4 = Agree  5 = Strongly agree
1) Your firm has policies on risk management.

2) These policies are seen to improve financial and operating stability of your firm.

3) There are mechanisms by which policies on risk management are expected to enhance corporate sustainability.

4) These mechanisms are seen to improve financial performance and enhance stakeholder value creation.

**Question 2:** What are the mechanisms, by which policies on risk management are expected to improve financial performance, stakeholder value and enhance corporate sustainability of your firm?

Section 3

**Risks, opportunities and corporate sustainability**

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
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</table>

1) Your firm responds to corporate sustainability risks and opportunities.

2) This response improves financial performance and enhances stakeholder value.

**Question 3a:** How does your firm respond to the risks and opportunities presented by corporate sustainability issues and how is this response positioning your firm towards improved financial performance and stakeholder value creation?

1) The risk management practices of your firm incorporate corporate sustainability issues.

2) This improves the financial and operating stability of your firm.

**Question 3b:** How does your firm’s risk management practice incorporate corporate sustainability issues to improve financial and operating performance?
Section 4

Financial risk

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly agree

1) The business activities and operations of your company are exposed to financial risk. 1 2 3 4 5
2) Financial risk is an integral part of your firm’s business and project operations. 1 2 3 4 5
3) Financial risk has a significant impact on your company’s share price behaviour. 1 2 3 4 5
4) Cash flow volatility, commodity prices, foreign exchange rates and interest rates impacts on your company’s business activities and operations. 1 2 3 4 5
5) Derivatives are used by your company to hedge and mitigate the impact of financial risk. 1 2 3 4 5
6) Financial risk of your organisation can be effectively managed through analysis, implementation of policies and evaluation. 1 2 3 4 5
7) Financial risk is considered an important factor in determining the overall financial performance and health of your firm. 1 2 3 4 5

Question 4: What financial risks have your firm faced and/or continue to face and what is the relationship between financial risk and other key operating and non-operating risks?

Section 5

Operational risk

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly agree

1) The business and project operations of your company are exposed to operational risks. 1 2 3 4 5
2) Managing and controlling operational risk is an integral part of business and project activities of your firm. 1 2 3 4 5
3) There is a broad approach to managing and controlling operational risk in your firm. 1 2 3 4 5
4) Appropriate incentives are continuously provided by your firm to lessen their exposure to unwanted operational risk and to continue to expand their commitment towards operational risks.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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</table>

5) There are appropriate indicators that spot problems on operational risk in their earliest stages so that preventive actions can be taken.

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<thead>
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<th>1</th>
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6) The operational risk management processes and strategies of your firm are designed to consume resources efficiently.

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</table>

7) Reducing cost and increasing revenue is a significant aspect of your operational risk controls.

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**Question 5:** How does your organisation effectively manage and control its operational risks?

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Section 6

**Strategic risk**

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
</table>

1) The business and project operations of your firm are exposed to strategic risks.

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<thead>
<tr>
<th>1</th>
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</table>

2) There is a good understanding of your firm’s strategic risk.

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</table>

3) Strategic risks have significant impact on your firm’s business and project operations.

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<th>5</th>
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</table>

4) Strategic risk management processes and techniques of your firm are based on established practices and benchmarks.

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<tr>
<th>1</th>
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</table>

5) Strategic risk management techniques of your firm are important in identifying, assessing and managing other key risk exposures.

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<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
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</thead>
</table>

6) Managing risk and strategy setting activities are often viewed as separate and distinct functions in your firm.

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<tr>
<th>1</th>
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<th>3</th>
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</thead>
</table>

**Question 6:** In your view, is managing risk and strategy setting activities often viewed as separate and distinct functions in your firm?

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Section 7

Regulatory or compliance risk

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree  
2 = Disagree  
3 = Neutral  
4 = Agree  
5 = Strongly agree

1) The business and project operations of your firm are exposed to compliance risks.  
2) The principles and concepts of your firm’s compliance risk management practices are clear and well understood.  
3) Compliance risk is an integral part of your firm’s business, project and decision making process.  
4) Compliance risk is central to your firm’s viability, direction, ongoing health and safety of individuals, communities and the protection of the environment.  
5) Compliance risk management solutions are used to mitigate the impact of your firm’s operations on communities and the environment.  
6) Compliance risk in your firm is based on cost-effective risk management practices.

Question 7: How does your firm’s compliance risk management solution mitigate the impact of its operations on communities and the environment?

Section 8

Managing and controlling key risks

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

1 = Strongly disagree  
2 = Disagree  
3 = Neutral  
4 = Agree  
5 = Strongly agree

Your firm has a portfolio view of its key risks.  
These key risks are practically applied in business and project operations as well as decision making processes.  
Adequate risk management techniques, processes and practices are in place to mitigate key risks.  
These techniques, processes and practices are understood by those required to use them.  
The ability to understand and manage key risks allows your firm to assume higher levels of risk.  
Effectively managing your firm’s key risks can maintain and preserve financial performance which leads to achievement of corporate objectives.  
Your firm ensures sufficient plans are in place to manage and control key risk so as to realise opportunities, maintain financial stability and be sustainable.
Question 8: How does your organisation effectively manage and control its key risks?

Section 9

Loss prevention measures and control of key risks

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) You are satisfied with your firm’s risk management efforts on:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Improving financial performance</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Enhancing stakeholder value creation</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Maximising share value</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>2) There are contingency plans for mitigating both financial and non-financial risks.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>3) These plans are continuously implemented.</td>
<td>1 2 3 4 5</td>
<td></td>
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<td></td>
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<tr>
<td>4) Your firm rewards and encourages appropriate risk taking behaviour and challenge unbalanced risk behaviour.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5) Continuous improvement is applied to managing and controlling key risks in your firm.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
</tbody>
</table>

Question 9: What formal and informal loss-prevention measures are actually being undertaken by your firm in managing and controlling their key risks?

Section 10

Improving safety and risk awareness

Please read the following statements and circle the number next to each statement that best reflects your agreement or disagreement with it.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Systems and procedures are in place to provide quality assurance on health, safety &amp; environment and safety related decisions.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Your firm has developed training programs to help employees, and other key stakeholders understand and practice cost-effective risk management.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Knowledge sharing about risk management is continuously improved.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Financial and non-financial risks are discussed in your firm’s business strategy and operational planning.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Question 10**: How does your firm improve safety consciousness, educate and communicate risk awareness to its employees, communities and other stakeholders?

Section 11

**Risk management strategy and operational planning**

The following statements refer to your firm’s risk management strategy and operational planning. Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
</table>

Your firm’s Enterprise Risk Management (ERM) process is:

- Integrated
- Holistic
- Integrated and holistic
- Non existence
- Other

1) Your firm implements ERM to reflect stakeholders concerns

2) Your firm’s risk management strategies assess the past and present performance against appropriate indicators and more or away from corporate sustainability.

3) This assessment reflects the concerns of your firm’s stakeholders, the wider communities and the public.

**Question 11a**: How does your firm’s risk management strategies assess the past and present performance against appropriate indicators and more towards or away from corporate sustainability - does this assessment reflect the concerns of the stakeholders, the wider community and the public?

1) Your firm’s risk management practices establishes a coherent approach to managing and reporting on:

   a) Contributing to the real economy
   b) Leading the way in stakeholder relations management
   c) Promoting a sustainable future
**Question 11b**: How are risk management and corporate sustainability issues monitored and what key performance indicators are considered at quarterly and annual meetings?

**Section 12**

**Relationship between risk management and corporate sustainability**

The following statements refer to the relationship between risk management and corporate sustainability of your firm. Please circle the appropriate number in each statement.

<table>
<thead>
<tr>
<th>1 = Strongly disagree</th>
<th>2 = Disagree</th>
<th>3 = Neutral</th>
<th>4 = Agree</th>
<th>5 = Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) There is a relationship between risk management and corporate sustainability of your firm.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Risk management and corporate sustainability are integrated into your firm’s business strategy and planning.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Cost-effective risk management practices can enhance long term sustainability and survival of your firm.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Question 12**: In your view, do you think there is a relationship between cost-effective risk management practices, sustainability and long term survival of your firm?
Appendix 8: Decision Rules for Risk Disclosures and Management

The following decision rules for risk disclosures and management were adopted in qualitative data analysis using content analysis approach.

### DECISION RULES - RISK DISCLOSURES AND MANAGEMENT

<table>
<thead>
<tr>
<th>Rule</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>To identify risk related information, a broad definition of risk is to be adopted in the context of the study.</td>
</tr>
<tr>
<td>2)</td>
<td>Sentences are to be coded as risk information if the reader is informed of any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure.</td>
</tr>
<tr>
<td>3)</td>
<td>The definition of risk adopted should be interpreted in a way that ‘good’ and ‘bad’ ‘risks’ as well as ‘uncertainties’ would be deemed to be confined within the definition.</td>
</tr>
<tr>
<td>4)</td>
<td>Although the definition of risk is broad, disclosures and management must be specifically stated; they cannot be implied.</td>
</tr>
<tr>
<td>5)</td>
<td>The risk information can be classified according to and with reference to the risk categories.</td>
</tr>
<tr>
<td>6)</td>
<td>Sentences of general policy concerning internal control and risk management systems as mandated by the regulatory agencies shall be classified into financial and non-financial statements of risk management information.</td>
</tr>
<tr>
<td>7)</td>
<td>Sentences of general policy concerning financial risk management shall be classified as monetary, non-monetary, neutral and non-time specific statements of risk management information.</td>
</tr>
<tr>
<td>8)</td>
<td>Financial risk information are those risk information that either disclose directly the financial impact of a risk or disclose sufficient information to enable the reader to calculate the financial impact of a risk.</td>
</tr>
<tr>
<td>9)</td>
<td>If a sentence has more than one possible classification, the information will be classified into the category that is most emphasised within the sentence.</td>
</tr>
<tr>
<td>10)</td>
<td>Tables that provide risk information should be interpreted as one line equals one sentence and classified accordingly.</td>
</tr>
<tr>
<td>11)</td>
<td>Any risk information that is repeated shall be recorded as a risk information sentence each time it is discussed.</td>
</tr>
<tr>
<td>12)</td>
<td>If risk information is too vague in its reference to risk, then it shall not be assumed and recorded as risk information.</td>
</tr>
</tbody>
</table>

Adapted from Linsley & Shrives, 2006
**Appendix 9: Selected Major Accidents in the Extractive Sector (1921-2015)**

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION</th>
<th>CHEMICAL</th>
<th>EVENT</th>
<th>DEATHS/INJURIES/FATALITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>Oppau, Germany</td>
<td>Ammonium Nitrate</td>
<td>Explosion</td>
<td>561 Deaths</td>
</tr>
<tr>
<td>1942</td>
<td>Honkeiko</td>
<td>Coal Dust</td>
<td>Explosion</td>
<td>1,572 Deaths</td>
</tr>
<tr>
<td>1944</td>
<td>Cleveland, USA</td>
<td>LNG</td>
<td>Explosion</td>
<td>131 Deaths</td>
</tr>
<tr>
<td>1947</td>
<td>Texas, USA</td>
<td>Ammonium Nitrate</td>
<td>Explosion</td>
<td>576 Deaths</td>
</tr>
<tr>
<td>1948</td>
<td>Ludwigshafen</td>
<td>Dimethyl ether</td>
<td>Explosion</td>
<td>207 Deaths</td>
</tr>
<tr>
<td>1956</td>
<td>Cali, Colombia</td>
<td>Dynamite</td>
<td>Explosion</td>
<td>1,100 Deaths</td>
</tr>
<tr>
<td>1968</td>
<td>Hull, UK</td>
<td>Acetic Acid</td>
<td>Explosion</td>
<td>2 deaths, 13 Injuries</td>
</tr>
<tr>
<td>1969</td>
<td>Basle, Switzerland</td>
<td>Nitrogen Liquid</td>
<td>Explosion</td>
<td>3 Deaths, 28 Injuries</td>
</tr>
<tr>
<td>1969</td>
<td>Teeside, UK</td>
<td>Cyclohexane</td>
<td>Fire</td>
<td>2 Deaths, 23 Injuries</td>
</tr>
<tr>
<td>1970</td>
<td>Philadelphia</td>
<td>Catastrophic Crack</td>
<td>Fire</td>
<td>1 Death, 50 Injuries</td>
</tr>
<tr>
<td>1972</td>
<td>Brazil</td>
<td>Butane</td>
<td>Explosion</td>
<td>37 Deaths, 53 Injuries</td>
</tr>
<tr>
<td>1972</td>
<td>Netherlands</td>
<td>Hydrogen</td>
<td>Explosion</td>
<td>4 Deaths, 4 Injuries</td>
</tr>
<tr>
<td>1973</td>
<td>Potschefstroom</td>
<td>Ammonia</td>
<td>Toxic</td>
<td>18 Deaths</td>
</tr>
<tr>
<td>1974</td>
<td>Flixborough, UK</td>
<td>Cyclohexane</td>
<td>Explosion</td>
<td>28 Deaths, 53 Injuries</td>
</tr>
<tr>
<td>1975</td>
<td>Antwerp, Belgium</td>
<td>Ethylene</td>
<td>Explosion</td>
<td>6 Deaths</td>
</tr>
<tr>
<td>1976</td>
<td>Baton Rouge, USA</td>
<td>Chlorine</td>
<td>Toxic</td>
<td>10,000 Evacuations</td>
</tr>
<tr>
<td>1976</td>
<td>Houston, USA</td>
<td>Ammonia</td>
<td>Toxic</td>
<td>6 Deaths, 200 Injuries</td>
</tr>
<tr>
<td>1976</td>
<td>Seveso, Italy</td>
<td>Dioxin</td>
<td>Toxic</td>
<td>1000+ Injuries</td>
</tr>
<tr>
<td>1977</td>
<td>Columbia</td>
<td>Ammonia</td>
<td>Toxic</td>
<td>30 Deaths, 22 Injuries</td>
</tr>
<tr>
<td>1978</td>
<td>San Carlos de la Ripta, Spain</td>
<td>Propylene</td>
<td>Fire / Explosion</td>
<td>211 Deaths</td>
</tr>
<tr>
<td>1978</td>
<td>Chicago, USA</td>
<td>Hydrogen Sulphite</td>
<td>Toxic</td>
<td>8 Deaths, 29 Injuries</td>
</tr>
<tr>
<td>1979</td>
<td>Bantry Bay, Eire</td>
<td>Oil</td>
<td>Explosion</td>
<td>50 Deaths</td>
</tr>
<tr>
<td>1984</td>
<td>Bhopal, India</td>
<td>Methylisocyanate (MIC)</td>
<td>Toxic</td>
<td>4000 Deaths, 500,000 Injuries</td>
</tr>
<tr>
<td>1984</td>
<td>Mexico City</td>
<td>Liquefied Petroleum Gas (LPG)</td>
<td>Fire/Explosion</td>
<td>450+ Deaths</td>
</tr>
<tr>
<td>1986</td>
<td>Rhodes, NSW</td>
<td>Oil</td>
<td>Explosion</td>
<td>5 Deaths</td>
</tr>
<tr>
<td>Year</td>
<td>Location</td>
<td>Type</td>
<td>Event</td>
<td>Casualties</td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
<td>---------------------------</td>
<td>--------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1986</td>
<td>Chernobyl USSR</td>
<td>Nuclear</td>
<td>Fire / Explosion</td>
<td>31 Deaths</td>
</tr>
<tr>
<td>1986</td>
<td>Sandoz</td>
<td>Various Chemicals</td>
<td>Fire</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>Laverton</td>
<td>Hot Metal</td>
<td>Explosion</td>
<td>2 Deaths</td>
</tr>
<tr>
<td>1987</td>
<td>Cairns, QLD</td>
<td>Liquefied Petroleum Gas (LPG)</td>
<td>Explosion</td>
<td>1 Death, 5 Injuries</td>
</tr>
<tr>
<td>1988</td>
<td>North Sea</td>
<td>Gas</td>
<td>Explosion</td>
<td>167 Deaths</td>
</tr>
<tr>
<td>1989</td>
<td>Pasadena, USA</td>
<td>Polypropylene Gas</td>
<td>Explosion</td>
<td>23 Deaths, 300 Injuries</td>
</tr>
<tr>
<td>1990</td>
<td>Sydney</td>
<td>Liquefied Petroleum Gas (LPG)</td>
<td>Explosion</td>
<td>Damage</td>
</tr>
<tr>
<td>1992</td>
<td>Japan</td>
<td>Heat Exchanger</td>
<td>Fire / Explosion</td>
<td>10 Deaths, 7 Injuries</td>
</tr>
<tr>
<td>2003</td>
<td>Chongqing</td>
<td>Gas</td>
<td>Blowout</td>
<td>243 Fatalities</td>
</tr>
<tr>
<td>2003</td>
<td>Netherlands</td>
<td>Melamine Plant</td>
<td>Explosion</td>
<td>3 Deaths</td>
</tr>
<tr>
<td>2004</td>
<td>Skikda</td>
<td>LNG Plant</td>
<td>Explosion</td>
<td>27 Fatalities</td>
</tr>
<tr>
<td>2004</td>
<td>Glasgow</td>
<td>Liquefied Petroleum Gas (LPG)</td>
<td>Explosion</td>
<td>9 deaths, 40 Injuries</td>
</tr>
<tr>
<td>2005</td>
<td>Bombay</td>
<td>Ship Collision</td>
<td>Fire</td>
<td>22 Fatalities</td>
</tr>
<tr>
<td>2005</td>
<td>Texas City</td>
<td>Refinery</td>
<td>Explosion</td>
<td>15 Fatalities</td>
</tr>
<tr>
<td>2007</td>
<td>Usumacinta</td>
<td>Jack up Platform</td>
<td>Collision</td>
<td>22 Fatalities</td>
</tr>
<tr>
<td>2009</td>
<td>Nigeria</td>
<td>Pipeline</td>
<td>Explosion</td>
<td>100 Fatalities</td>
</tr>
<tr>
<td>2009</td>
<td>Jaipur</td>
<td>Gasoline Storage Area</td>
<td>Explosion</td>
<td>12 Fatalities</td>
</tr>
<tr>
<td>2010</td>
<td>Congo</td>
<td>Gasoline Road Tanker</td>
<td>Overturned</td>
<td>230 Fatalities</td>
</tr>
<tr>
<td>2010</td>
<td>Gulf of Mexico</td>
<td>Oil</td>
<td>Explosion / Blast</td>
<td>11 Deaths, 17 Injuries</td>
</tr>
<tr>
<td>2015</td>
<td>Brazil</td>
<td>Toxic Waste</td>
<td>Mine Dam Burst</td>
<td>19 Deaths, Dozens Missing, Thousands Displaced</td>
</tr>
</tbody>
</table>

Adapted from: Danaher, 1994; RPS Energy, 2010; Okoh & Haugen, 2013; Australian Broadcasting Corporation, 2015
Appendix 10: The Basics of Loss Prevention and Control

Companies that are serious about developing, implementing and maintaining an effective loss prevention and control program need to ensure that the following elements explained in the Table below are present in their business strategies and plans.

<table>
<thead>
<tr>
<th>THE BASICS OF LOSS PREVENTION AND CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management Commitment</strong></td>
</tr>
<tr>
<td><strong>Assignment of Responsibility</strong></td>
</tr>
<tr>
<td><strong>Development of Program Objectives</strong></td>
</tr>
<tr>
<td><strong>Employee Involvement</strong></td>
</tr>
<tr>
<td><strong>Use of Metrics and Trend Tracking</strong></td>
</tr>
<tr>
<td><strong>Monitoring of the Program and Maintenance of its Visibility</strong></td>
</tr>
</tbody>
</table>

Adapted from Sammer, 2005
References


Ernst & Young. (2011). *Turn Risks and Opportunities into Results: Exploring the Top 10 Risks and Opportunities for Global Organisations - Oil and Gas Sector*. Australia: EYGM.


Gray, R., & Bebbington, J. (2000). Environmental Accounting, Managerialism and Sustainability: Is the Planet Safe in the Hand of Business and Accounting? *Advances in Environmental Accounting, 1*, 1-44.


