

Mining, markets and sustainable opportunities:

Global-national dynamics and voluntary standards in the precious minerals mining industry – A Namibian perspective



Arnold Middelkoop

Student no. 3514307
Master's thesis research
30 ECTS

MSc programme – Sustainable Development
Specialization track – Environmental Governance

Supervisor – Dr. W.J.V. Vermeulen
Second reader – Dr. R. Lozano

Faculty of Geosciences
Utrecht University

August 2014



Universiteit Utrecht

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Master thesis research – 30 ECTS

Submitted as part of the Utrecht University MSc research programme Sustainable Development – Track Environmental Governance

Department of Innovation and Environmental Sciences

Faculty of Geosciences

Utrecht University

Author: Arnold Middelkoop

Supervisor: Dr. Walter J. V. Vermeulen

Student no.: 3514307

Correspondence: Voorofscheweg 416
2771 MS Boskoop
The Netherlands
A.Middelkoop@students.uu.nl
Arnoldmid@hotmail.com

Copernicus Institute
Utrecht University
The Netherlands
W.J.V.Vermeulen@uu.nl

Abstract

The increasing importance of market-based voluntary sustainability standards has the potential to move businesses towards a self-governance organizational structure. The precious minerals mining industry has seen a serious increased involvement in these business-induced sustainability standards in the last decades, thus allowing the business practices to move towards a more sustainable, CSR-based structure. The potential impacts of these globally applied voluntary initiatives on the (sub-)national level allows for an interesting research possibility.

This research therefore aims to uncover the market-based incentives for moving towards sustainability standards, and provides qualitative analyses of good-governance performance of these business-induced initiatives. Furthermore, to uncover effects of self-governance standards on the national level within resource-rich developing countries, a case study for the country of Namibia is provided. Effects of globally applied sustainability standards on state-induced sustainability regulations are studied and insights about interactions between traditional (government-based) governance and (market-based) self-governance structures are provided. Building on a Theory of Change (ToC)-framework, this research provides insights into precious minerals markets on a global and national (Namibian) level for three basic commodities: gold, platinum and diamonds. The research design is divided into three main phases, covering precious minerals markets, standards' good governance quality and the Namibian case-study.

The first phase focuses on the key market trends and trade dynamics of relevance in the global precious minerals trade in a sustainability-context. The main findings are threefold. First, studied commodities show clear price volatility and overall price increase. Furthermore, peak minerals (decreased primary production possibility) is likely to cause long-term global supply issues. Finally, mining companies deem CSR-based business practices as increasingly important for competitiveness. The second phase covers the good governance-analysis of the main mining standards, which seem to perform relatively well overall on the categories analyzed. Main points of improvement include the need for providing adequate and localized auditing systems, complaints procedures, as well as setting up a transparent financial justification system and providing a solid budgetary plan. The final phase focuses on sustainable mining standards in the Namibian context. The governments partnerships with large multinational corporations has created favorable circumstances for most stakeholders involved. Shared ownership allows for partial control of mining activities. Whereas regulatory power has slightly shifted towards large corporations, community drawbacks have been rather slim. The globally increasing importance of market-based sustainability standards will keep transforming mining practices. The exact future of self-governance structures application cannot be predicted, yet their importance has already become visible.

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Acknowledgements

Before endeavoring into the complex but interesting world of sustainable mining standards, a few words of thanks must be given first. Because without the help of some people, this research would never have been conducted or taken shape the way it does now, which is why their invaluable contribution must have a word of thanks in this report.

First of all, I would like to give my sincere thanks to my supervisor Dr. Walter Vermeulen for his invaluable advice and many suggestions on how to approach the complex issues and problems encountered during the course of writing the report. Your positive attitude in approaching the problems when I was stuck have helped a me lot in continuing on the difficult task of finalizing this Master's thesis. My thanks also for providing me with this interesting research topic when the need for a new topic was a highly pressing issue (i.e. previous topics chosen did not work out as planned, therefore luck was on my side when this almost ready-made research topic was still available).

I would also like to thank the second reader of this report, Dr. Rodrigo Lozano, for taking the time to read and judge upon this research, and also for providing advice on my research proposal.

Furthermore, I would like to thank my family and friends, whom have aided me and motivated me to continue working, both in good and bad times. Without these people supporting me I would have had a much harder time finishing this research and my studies in general. So, without calling everyone out by name, thanks a lot for your support and for helping me out and being there when needed.

1. Introduction

1.1. Sustainable governance of global commodity chains

The global economic growth in trade and production has brought both great prosperity and opportunity for both developed and developing countries, while also exposing serious constraints and negative side-effects to global production systems (Gereffi et al., 2005). The almost exponential increase of market activities in the last few decades, including global commodity trade, is widely accepted to cause environmental (and social) externality problems (Dean, 1992; Ekins et al., 1994; Kox, 1991; Perroni & Wigle, 1994). Governing towards solutions for these complex externality problems has been a major concern for governmental organizations, which continuously cooperated with private market organizations (i.e. mainly large transnational corporations) in public-private governance structures (Bäckstrand, 2006). The complexity of sustainable development (SD) issues in global trade, forced the traditional view of nation-state governance to alter towards more effective alternative governance arrangements that involved more than simply the implementation of rule-making authority (Humprey & Schmitz, 2001; Jordan, 2008; Kemp et al., 2005).

Until recently, state authority has been a major driver of these initiatives, yet organizational shifts gradually became visible within these sustainable supply chain governance systems (SSGC-systems). The increased internationalization of commodity trade has brought a global SSGC-governance shift from (supra)national state-authority, towards globalized governance with significant market influence (Vermeulen, 2010). The role of private market actors in greening supply chain systems is becoming more important in practice, a phenomenon which numerous scholars have gauged their attention to (Srivastava, 2007). In a world where corporate social responsibility (CSR) has pretty much penetrated the core business principles of large transnational corporations (Waddock et al., 2002), the movement towards market-based governance initiatives seems like a logical next step in the shift towards sustainable commodity chains and production systems. Porter & Kramer (2006) argue that CSR-activities can actually enhance the competitive positions of and create value for businesses, thus also giving economic incentives towards SSCG-systems. Within this sustainable governance shift, the market-based policy tools of voluntary sustainability standards and certification schemes is among the most promising emerging phenomena for the management and regulation of global production and trade networks (Clay et al., 2005; Giovannuci & Ponte, 2005).

1.2. Private initiatives: sustainability standards and certification schemes

Increasingly important in the global governance effort to reduce harmful environmental and social side-effects of production, is the role of corporate governance initiatives in greening their supply chain systems (Mueller et al., 2009; Barry et al., 2012; Meadowcroft, 2007; De Boer, 2003). In the context of decision-making and the global call for sustainable manufacturing, the role of large transnational corporations is essential: their influence on resource-use behavior is undeniably large (Newell, 2001). Through corporate investment in peripheral economy regions, development paths of resource rich third-world countries is impacted and shaped. At the core of inter-firm governance is the introduction of private sustainability initiatives in global production networks (Nadvi, 2008), potentially being the cumulative result of a “*social response to the governance deficits of the 1980’s*” (p.324), when private actors started playing a bigger role in defining the regulations of the organization of global production networks (Gereffi & Mayer, 2006) and global concern over environmental issues and labor rights became a central topic of debate within international conventions (Ponte & Gibbon, 2005).

Within global commodity production networks, attention towards environmental (Andrews, 1998) and social (Fichter & Sydow, 2002) issues through standardization and certification practices has the potential to “*contribute to the quest for corporate sustainability*” (Bioral & Gendron, 2011, p.333). Standardization and self-regulation corporate management tools provide incentives for businesses to become more sustainable in their actions, while simultaneously pushing the market towards increased sustainable production through competition (Porter & Kramer, 2011). The emergence of commodity chain greening for food and beverages (Clay, 2004; Higgins et al., 2008; Giovannucci & Ponte, 2005; Reynolds et al., 2007; Reinecke et al., 2012), textile (Goldbach et al., 2003; Kuik, 2005), forestry (Ault et al., 2008; Holvoet & Muys, 2004; Overdevest, 2010; Rametsteiner & Simula, 2003) and biofuels (Lewandowski & Faaij, 2006; Scarlat & Dallemand, 2011; Van Dam et al., 2008) industries have been studied extensively and the amount of corporate initiatives is plentiful for these commodities (Potts et al., 2014). Even so plentiful, that the competing standardization and certification schemes for commodities result in overexposing and confusion among stakeholders in some cases (Kaphengst et al., 2009). Surprisingly, relatively underexposed remain the mining and trade of natural mineral resource commodities. This is true for the state of knowledge development in this field which still somewhat resides in the developmental stages (Hilson & Basu, 2003; Wagner & Wellmer, 2009), as well as the relatively small amount of market-based mining sustainability initiatives and governance institutions (Danielson & Digby, 2006; Greene et al., 2002). From a scientific point of view, the knowledge gap in the field of minerals and mining standardization is remarkable: the sustainability results of understanding this commodity group would certainly reap interesting results due to its wide product application range (Richards, 2009). Within any commodity chain, the stage in which mineral resources are extracted and traded is hardly deniable as essential. With the rise of voluntary market-based regulation, the powerful transnational corporations are on the verge of shifting their production systems towards a more sustainable future (Gereffi, 2001). A clear overview and analysis of the available sustainability standards and certification schemes within the mineral commodities industry, as well as the interlinked (market-based) governance and power dynamics, certainly provides an interesting knowledge gap to embark upon in this thesis.

1.3. Global and national sustainability in the precious minerals mining industry

1.3.1. Sustainability initiatives in the global and national minerals markets

The role of SD in the global mining and minerals trade industry has become important only since the 1990's, when several industry reforms happened that provided new opportunities for expansion of extraction and trade (Dashwood, 2013). Multiple voluntary standards and certification schemes have been implemented since: the industry is now actively “*developing industry codes of conduct, implementing environmental management systems, setting performance targets and producing environmental reports*” (Greene et al., 2002, p.50). Some large extraction corporations have developed codes of conduct that are mainly applied on a national or regional operations level, causing them to vary in their application (Jenkins & Yakovleva, 2006). While individual companies' efforts to greening their extraction mechanisms have been fruitful, Greene et al. (2002) argues that this has gone largely unrecognized by the global market and consumers. The need for a credible mechanism to differentiate companies on their sustainable performance is either lacking or in an initiating stage. Developing such mechanisms would be most essential for the extraction of precious mineral resources, since labeling efforts for these commodities has direct consumer influences and effects, as is shown by recent scandals over blood diamonds (Bieri, 2010; Le Billon, 2008) and the increasing pressure from jewelers to move towards sustainable practices in order to preserve their legitimacy (Kapferer, 2010). These efforts in moving towards sustainability for precious mineral commodities have both a global and national dimension, and interactions and dynamics between these global market and national production systems will be among the key topics in this research.

1.3.2. *Precious minerals and their significance as a commodity*

The extraction, refinery and trade of precious minerals and gems is a multi-billion dollar globalized industry that encapsulates a widely different range of natural resources. The term '*precious metals*' refers to gold, silver, platinum and other platinum group metals (PMG's) such as palladium, rhodium, iridium and related metal elements (Damarupurshad, 2005). From a sustainability perspective, three precious minerals stand out as being the most interesting commodities (and commodity value chains) for the purpose of this research: gold, platinum and diamonds. This thesis uses the term '*precious minerals*' for referring to these three commodities, unless stated otherwise. Their economic significance (Argitas, 2010; AWDC, 2011; Bloxham et al., 2013), high recycling rates (Richards, 2006) and increasing importance for applications in (electronic) products (Chancerel et al., 2009), make these precious minerals crucial in the current global society. They therefore are likely to have the greatest potential to quickly move towards a sustainable supply chain governance-model.

1.3.3. *Global precious minerals trade and peripheral economy effects*

The introduction of such global governance models will certainly have some lasting effects on the standards of production within those countries rich in precious minerals. Especially developing nations with high financial dependence on natural resource extraction will feel the heat of the sustainability transition. These dependent peripheral economies generally accrue less wealth than core-economy nodes within commodity chains, thereby making them more vulnerable to changes (Gereffi & Korzeniewicz, 1994). Multiple scholars have focused their attention on peripheral economies within a sustainable resource governance context (Fisher, 2008; Maconachie, 2009; Rist et al., 2007). However, within such case-studies, "*in particular the role of national economic and institutional structures in driving processes of transnational governance, including sustainability standards, has been largely neglected*" (Manning et al., 2012, p.197). The dynamics of transnational corporations' production shifts on economies and governance in a national context clearly requires further insights from a scientific perspective. Based on the case of the precious mineral commodity chains, an exploration of the national governance context interactions with global sustainability standards can contribute to further understanding of the effects of market-based sustainability initiatives. Key value chain actors and related stakeholders' influence on both global trade and national economic and governance structures are essential within this exploration. Recourse-dependent peripheral economy countries have the opportunity to get on the sustainability bandwagon through community based-development (Buur et al., 2013; UNCTAD, 2013). One of these peripheral economies that is dependent on precious minerals, is the country of Namibia, providing an interesting peripheral economy case-study.

1.3.4. *Significance of Namibia in sustainable precious minerals trade*

With the neighboring South Africa being among the major producers of precious minerals in the world (Hamann, 2004), the mining of gold, platinum and diamonds in Namibia can be argued to reside in the periphery of mining production within the Southern African region (SADC, 2004). As a country that is highly dependent on mineral extraction and export for its economic development, expanding and maintaining mining activities is of vital importance to the countries' prosperity: roughly one third of Namibia's GDP is directly attained from its mining activities (Lange, 2003). This also implies that on the global mineral commodities market, Namibia is an important supplier of especially precious minerals, mainly because of its large gold and diamond mines (Ibid.). Nevertheless, despite its large mining industry as a principle source of income, the country still resides among the developing peripheral nations of sub-Saharan Africa. Because of these characteristics, as well as its well-developed governmental institutions (Ruppel, 2008), it is as a nation highly relevant in the context of the sustainable mining transition. Furthermore, Namibia is significant in the context of this research because it fits into a collaborative project by the Utrecht Copernicus Institute and Polytech Namibia.

1.4. Research aim

The aim of this research is to help improve understanding of the (un)successfulness of environmental and social standards and certification schemes (and their implementation) in a single industry, by analyzing the dynamic interactions between core commodity economies and peripheral ones. Commodity value chains dynamically interact with national export industries: gaining understanding of this interactive governance process, as well as the responses by the market and civil society, are key objectives of the research. Application to the precious minerals industry, with extension to a case-study within the peripheral resource-dependent economy of Namibia, is aimed to provide key insights into global sustainability standards' effects within a national context.

Secondly, the aim of this research is to develop a structured comparative analytical methodology for comparison of market-based voluntary sustainability standards and certification schemes, by applying a combined set of analytical tools to these relevant SD-initiatives for the precious minerals mining industry. Application to this industry should provide an exemplification of the use of this analytical methodology, while it is ultimately aimed at expanding its use on other types of commodity market and their respective standards and certification schemes.

1.5. Relevance

1.5.1. Societal relevance

Provided that the shift towards market-based voluntary sustainability initiatives is an emerging issue within precious minerals production and trade, gaining understanding of the effects resulting from the underlying governance processes may be crucial for multiple actors involved. While the mining industry itself might gain understanding of the dynamics involved with sustainability standards and certification schemes, similar processes might be going on in related or even different commodity industries. Governmental and civil society actors might reap benefits from further understanding the processes by adjusting their governing strategies accordingly. Furthermore, focusing on the national context effects might provide benefits for societies as well, since understanding the voluntary sustainability initiatives processes might aid in improving the implementation of these governance models in practice. Speeding up the dynamic processes of sustainability governance by improving this understanding, might eventually speed up the process towards the creation of better livelihood conditions and decreased environmental and societal problems, mainly for local communities in natural resource-dependent peripheral economies.

1.5.2. Scientific relevance

Using transnational sustainability standards and certification schemes within a national economic and institutional governance context provides key insights and fills relevant knowledge gaps within the field of sustainable supply chain governance. The precious mineral commodities, while being important for the global economy, have been underexposed in the scientific field of market-based sustainability initiatives. A clear-cut and structured assessment and comparison of relevant standards and certification schemes within this commodity industry is either incomplete, neglecting assessments of good governance principles, or non-existent within currently available studies. The contributions of this thesis could provide first insights into a structured assessment and methodology for analysis of mining and precious minerals market-based sustainability initiatives. Application of this analysis to a peripheral resource-dependent country, such as Namibia, provides further insights into the effects and driving governance processes behind these transnational supply chain greening initiatives.

1.6. Research question(s)

Considering the scientific knowledge gap outlined in the previous sections of this chapter, as well as the research aim that has been formulated in section 1.4, the central research question of this thesis can be formulated as follows:

“To what extent have global commodity markets transformed towards sustainable resource extraction governance, and what are implications of this transition for specific exporting countries with regard to opportunities to respond to these dynamics by adjusting their national sustainability practices?”

This central research question can be further subdivided into the following research sub-questions:

1. Which key market trends and trade dynamics of relevance can be identified for the global precious minerals export market?
2. What global sustainability standards and certification schemes of relevance currently exist in the precious minerals industry sector and which key actors and actor groups are involved in these initiatives?
3. What are the main characteristics of these sustainability standards and certification schemes?
4. How well do these sustainability standards qualitatively perform in terms of good governance performance?
5. How are these standards and certification schemes influencing the governance practice of the precious minerals export market in Namibia?
6. What implications does this application have for Namibia as a country and for the local precious minerals industry sector in particular?

1.7. Research framework

In order to structurally answer the research question(s), a framework of several research phases has been developed. The framework consists of three distinctive phases, moving from market analysis to sustainability initiatives assessment, eventually towards exploring global-national dynamics within the context of the Namibian case-study. Figure 1 depicts a schematic representation of the framework.

Phase 1. Understanding market dynamics and trends

Before diving deeper into the voluntary market sustainability standard initiatives and certification schemes, core underlying market mechanisms need to be clarified. By analyzing statistical data on relevant market trends and dynamics in the context of sustainability, insights into global market issues can be uncovered. The data provides a basis for understanding market responses to introduction of standardization and certification regimes. Using the theory of change, a sample of market players will be selected and assessed on sustainable market transition dynamics, from which global trends can be extrapolated. These will then be verified using available literature or empirical statistical data.

The assessment involves three mineral resources, being gold, platinum and diamonds. Each of these resources will be mapped using four major exporting companies each, totaling 12 companies within the assessment. Their CSR-activities will provide initial insights into the sustainable state of the respective commodity markets. These CSR-activities will provide insight into what can still be done in the field of transformation towards sustainable production practices, which will serve as basic underlying information for the second phase of the research, which focuses on voluntary private sustainability initiatives within the global commodity markets.

Phase 2. Identifying and characterizing key standards and certification schemes

When the core market dynamics have been identified, the next phase will be to identify, assess and increase understanding of voluntary sustainability initiatives within the global precious minerals export market. Assessing and analyzing existing (global) standards and certification schemes is the first step in this phase. Desk study will provide an overview of the most crucial global initiatives in the precious minerals industry sector, as well as crucial characteristics thereof. This will be linked to the identification and analysis of crucial actor groups and stakeholders, which play essential governing roles within the process of adopting and maintaining sustainability initiatives. The characterization process will be additionally fueled with crucial background information and trends from key stakeholders within the standard-setting initiatives actor base, through several ‘practical background information’ interviews.

Furthermore, this phase assesses whether or not the selected sustainability standards and certification schemes adhere to the principles of good governance. The institutional concepts which ‘shape’ the success of any governance initiative are applied to see if existing standardization initiatives have been successful in their aims, or have been insufficiently applied or organized by their respective initiators. As the initiatives under study are mainly privately held or cooperatively public-privately organized, the governance arrangements are studied using multiple theoretical concepts.

Phase 3. Exploring global-national linkages through case-study application

The collective results provides us with insights on the global level, however, the effects of sustainable initiatives in practice also need to be addressed on a national/firm-level. The Namibian case-study will be used to study the processes of interaction between global and national environmental governance regimes. This phase ‘zooms in’ on several transnational corporations active in Namibia, which will be used to analyze the dynamic interactions between the different commodity chain levels (i.e. firm, national, global). This analysis will provide a general overview of global sustainability initiatives’ influence on and interactions with both the national governance-level and the firm-practice level. The final results of the research consist of a structured overview of the assessment of sustainable standards and certification schemes in the global precious minerals export sector, as well as insights into relevant governance interactions between levels within the value chain (i.e. global vs. national/firm-level).

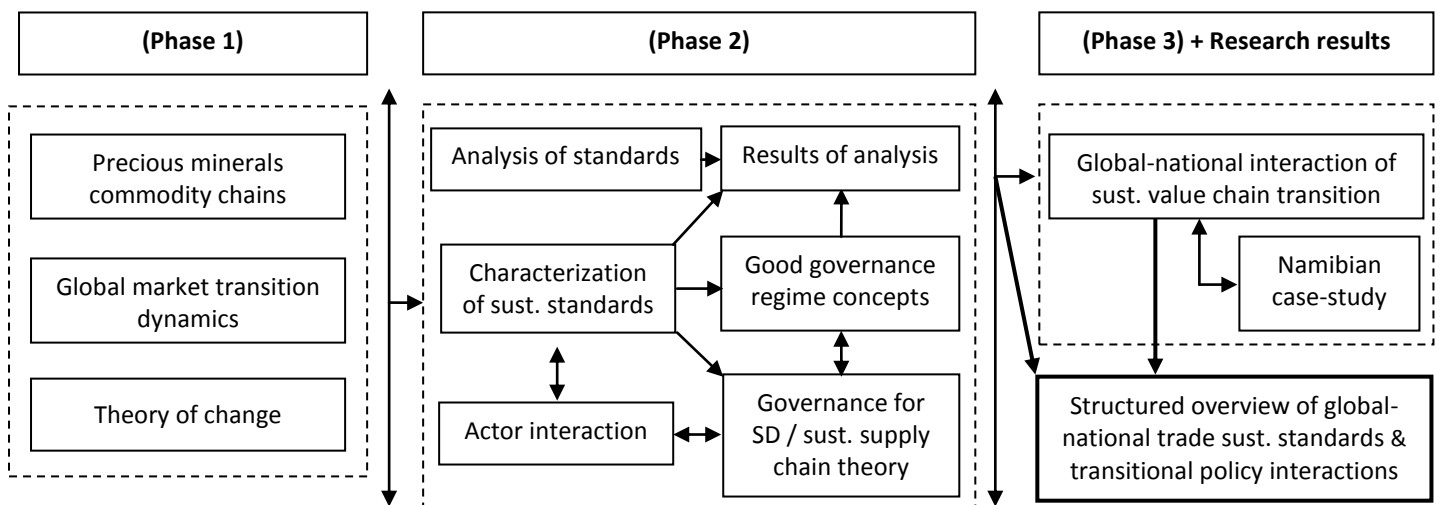


Figure 1. Research framework model as divided into relevant research phases

1.8. Outline

The thesis will be outlined according to the three phases or ‘parts’, as is described in the research framework (Figure 1). Each part will be further subdivided into relevant chapters and sub-sections. First, the applied methodology is elaborated upon and the relevant theoretical contributions and background is provided in chapter 2 and 3, respectively. Then we move on to the results, which are subdivided in several phases and (sub)chapters. The first phase will elaborate on the precious minerals markets and focus on price and sustainability trends, as well as explaining more about commodity-specific supply and demand analyses. This will provide us with the needed background in order to move on to the analysis of available voluntary sustainability initiatives in the precious minerals mining industry, which will be the central focus in the second phase of the research. After a selection- and classification-process, the standards will be assessed according to multiple criteria and thereafter applied within a central case-study. This case-study covers the third and final phase of the research, which focuses on the application of sustainability standard in the precious minerals mining industry in the country of Namibia. The global-national dynamics in particular will be a central topic of debate within this phase, as well as the CSR-related activities in the national context. The research will be finalized by discussing the research results, as well as providing a concluding section which will attempt to answer the previously stated research questions.

2. Methodology

The methodological approach that is taken for this research project involves several strategies. Multiple methodological approaches will be used in order to be able to correctly and systematically address and go into the contents of the earlier presented research framework. As stated, the research is divided in three major phases, each of which require different types of analytical methodologies. The multi-level approach on both the meso- and macro-level, including their interactive dynamics, allows for comparison of different operational market and governance scales. This is suggested to impact the reliability and validity of the research design, which therefore will also be briefly discussed.

2.1. Research strategy

The research approach taken for this thesis consists of several methodological strategies. The chosen diversification of applied methodological approaches, allows for in-depth analysis of the research objects in both *breadth* (i.e. analysis of the precious minerals global market trends and dynamics) and *depth* (i.e. application of global sustainable standards and certification effects within the Namibian national governance context). Main strategies include the use of an elaborate desk research, as well as a case-study approach.

2.1.1. Desk research

Throughout the entire research, the application of a desk research approach will be involved in the process of gathering relevant information. For this, the snowball method of collection sources will be used: new literature sources will be extracted from the sources that are already found (Verschuren & Doorewaard, 2010). The intensity of the literature needed varies along the distinctive phases of research, which has been elaborated upon in the research framework. The first phase of the research is based on an extensive literature study, focusing on the quantitative economic side of the trends and dynamics within the global precious minerals market. The second phase, involved with the good-governance based assessment of relevant standards and certification schemes, focuses on the analysis of the standards and certification schemes. The role of literature in this phase mainly resides with the application of principles of good governance and the shifting governance modes. Finally, the third phase uses literature in the context of a case study approach, which Verschuren & Doorewaard (2010) distinct as a separate category of research strategy.

2.1.2. Case study

The case study in the third phase of this research aims to connect the global sustainability governance shift towards market-based initiatives to national implications, both on a national governance, civil society and industry level. This will remain to be in the context of precious minerals and its sustainable performance dynamics, as well as the related governance implications. Hereby, the case study is reduced in scope and allows for a qualitative analysis of (potential) key sustainability shifts in a peripheral resource-dependent economy. The limitation to several transnational corporations for each precious mineral commodity can also be argued to fall under the term ‘case study’. These companies will be used as guiding examples along the storyline of the first two phases of research. While these companies dominate most of the global market activity, they are generally conglomerations of individual companies that are locally active as producers of the focal commodities (WEF, 2011). Furthermore, the sample of sustainable standards and certification schemes in the second phase are among the dominant sustainability initiatives, but can arguably also be called ‘case study’.

2.2. Data collection

The initial phase of research mainly collects market data from relevant databanks whom are concerned with the economic statistics of global commodity trade. This quantitative data is extracted from sources like World Bank, several United Nations sub-organizations, the International Monetary Fund (IMF), Eurostat, as well as reports from branch organizations. The primary data concentrates on topics like global market price dynamics, consumer demand over time, and production capacity of the relevant commodities. For the focus on the individual companies within the market analysis, main sources will be the publications provided by companies themselves (yearly publications), as well as third-party organizations (such as branch organizations for specific commodities). The second phase is concerned with the sustainability standards and certification schemes, for which a good governance framework from the ISEAL Alliance (ISEAL, 2013) and the governance modes identification by Driessen et al. (2012) are applied within the analysis. The context will be provided by theoretical framework, which will be elaborated upon in Chapter 3. The standards themselves are collected on the basis of the ITC standards map database (ITC, 2014), other related meta-standardization organizations, scientific publications, company publications, branch organization publications and NGO data, such as the IIED sustainable standards overview (Potts et al., 2014). Finally, for the third phase, qualitative data is collected from Namibian governmental publications, as well as company or industry publications on a national, regional or local level. These data sources are then connected to the global framework of commodity chain sustainability and the governance issues that are interconnected with this framework. Furthermore, a major source of information in this phase will be scientific publications on global-national governance interactions with regard to supply chain systems, as well as literature on sub-Saharan African or Namibian characteristics and local effects of potential governance shifts from a market perspective.

2.3. Research design: reliability and validity

The implications of the broad design of the research framework, its multiple viewpoints and governance levels involved in the analysis, the reliability and validity of results might be impacted. The different levels of analysis involved, as well as their interactive dynamics, could cause the reliability of research results to be lowered and subsequently be impacted in their degree of validity (i.e. measuring what is intended to be measured). The analysis in several stages is largely based on documentation and literature sources, thereby limiting the possibility for external verification (i.e. research in the field in order to check documented claims). Therefore, on the interactive governance level, the internal validity of the research design is enhanced through the introduction of a case-study approach. Furthermore, the theoretical framework should provide a considerable degree of concepts in order to approach the dynamic structures involved with the analysis. By maintaining a limited scope with only several firms, voluntary sustainability initiatives and commodity types, the possibility to grasp the application of the theoretical concepts is increased.

3. Theoretical framework

The theories applied in this research are under influence of the different levels of scope that are used. As will be explained in section 3.2.2., the dynamic interactions between the global market, commodity supply chain, as well as the firm-level are all requiring differentiated theoretical approaches. Therefore, an attempt is made in this chapter to move from global market dynamics in the context of sustainable development, towards the commodity chain and firm-level theoretical elaborations. Where possible, it will be indicated which level is used within the theoretical framework. The final section of this chapter will provide a short concluding overview, aimed at bringing the theoretical approaches together and connect the dynamics between the relevant levels of analysis.

3.1. Sustainable development: governance and complexity

Ever since the world-famous United Nation's report 'Our Common Future' (Brundtland, 1987), the concept of sustainable development (SD) has been under constant transformation. If anything, the emergence of environmental and social concerns on a global scale "*has strengthened the demand for systems of governance that are capable of putting society on a more sustainable track*" (Jordan, 2008, p.17). With the acknowledgement of global limits to human activities and influence, the need for a uniform and collective solution towards a sustainable future became an increasing concern in global politics. In recent years, the responsibility towards global solutions has rapidly expanded beyond the realm of politics alone (Pattberg, 2005). The traditional *government* rule-making institutions have transformed into *governance* institutions, in which a multitude of stakeholders collectively manage the movement towards common goals. Ivanova (2005) accurately differentiates between the government- and governance-concepts by stating that the "*government acts with authority and creates formal obligations; but private corporations, nongovernmental organizations (NGOs) and their respective associations are all active participants in and creators of governance*" (p.46). According to Kemp et al. (2005), the concept of *governance* is merely a mode of social coordination, which is different from the *governing* act of steering, controlling and managing (sectors of) society. The act of governing is determined by stakeholder interactions, the level and scope of political interaction, as well as the dominant orientation of state and existing institutional structures. In order for such governing acts to become successful, a governance system should be "*one that channels behaviour in such a way as to eliminate or substantially to ameliorate the problem that led to its creation*" (Young, 1994, p.30).

The complexity in governing SD-related problems is reflected in the large amount of different temporal and spatial scales involved, as well as the multitude of stakeholders influencing its processes and outcomes (Martens, 2006). Three distinctive characteristics define the complex nature of dealing with SD issues on a global governance level (Voß & Kemp, 2006):

1. ***Heterogeneity of elements*** – Socio-ecological system complexity requires governing actors to rely on expert knowledge of systems and their interactions. Gaining understanding of the long-term dynamics of processes and interconnections is needed in order to successfully deal with the underlying problems. While knowledge institutions provide 'slices' of knowledge on specific sub-sections of reality, the governing bodies dealing with SD-problems should gain understanding of a whole range of disciplines and their dynamic interactions;
2. ***Uncertainty in system development*** – The impossibility of predicting developments in social, technological and ecological realms and associated effects of governance interventions provide difficulties in choosing correct measures to solve these issues. Transformation of markets or societies takes place in a multi-level context with many interconnected subsystems.

This inherent uncertainty requires strategies and structures solving problems to be adaptive, in order to circumvent possible future problems and change accordingly;

3. ***Path dependency in decision making processes*** – Social developments are often irreversible in their application, mostly because of the continuous process of (unpredictable) structural changes in dynamic market systems. According to Voß & Kemp (Ibid.), these structural changes cannot be attributed to any governance activities, but are merely the result of human modernization and innovation processes. The inherent path dependency originates from historical activities, which eventually lead up to future changes in society and its systems.

Jordan (2008) elaborates on the existing scholarly difficulties related to the concepts of ‘sustainable development’ and ‘governance’, which he states to be “*two of the most essentially contested terms in the entire social science - hardly a good foundation, one might think, for solid and insightful scholarship*” (p.18). Nevertheless, many attempts have been made to connect the two concepts into a central theory, usually referred to as the theory of governance for sustainable development, being “*processes of socio-political governance oriented towards the attainment of sustainable development, [encompassing] public debate, political decision making, policy formation and implementation, and complex interactions among public authorities, private business and civil society – in so far as these relate to steering societal development along more sustainable lines*” (cf. Meadowcroft, 2007, p.299). Again, the complexity of the theoretical concepts is reflected in the very definition itself. In order to deal with some of the complexity involved, scholars in the field of environmental governance have attempted to break down some of the most essential forms and types of governance structures.

Driessen et al. (2012) provide a detailed conceptual framework for distinguishing between modes of global environmental governance and particularly the shifts within these governance modes. They acknowledge that the distinguishable types of governance arrangements of governmental regulations, privatization and self-governance are among the most essential ways to solve collective action dilemmas. The framework encompasses five types of governance arrangements, which are characterized and explained in detail in Table 1 in Appendix 1. The remainder of this sub-section will explain some of the most essential characteristics of these governance arrangements.

<u>Centralized governance</u> –	Traditional state-centered rule-making structure with top-down characteristics. The centralized government uses formal regulation to steer markets and civil society in the desired democratically chosen direction. Nevertheless, market and civil society actors influence policy-making processes through lobbying and providing knowledge.
<u>Decentralized governance</u> –	The decentralization of governance is reflected in the principle of subsidiarity, in which governing capacity is handed to the smallest, lowest or least centralized autonomous body of government available, primarily at the regional or municipal level. Mainly because of time and region-specific (and more practical) solutions to complex issues.
<u>Public-private governance</u> –	Collective governance efforts by public (governmental) and private (corporate) organizations. While enforcement and execution of governance resides with state authority, considerable power is granted to private institutions. Competitiveness, informal private regulations and legitimacy of relations/procedures shape governance interactions.

Interactive governance – Broad actor influence with government, business and civil society working together as network partners on equal terms. Multi-level collaborations are based on trust and agreements (legitimacy) and solutions and policies are constantly negotiated. The interactivity of partnerships is also reflected in the transdisciplinarity of knowledge.

Self-governance – Private or civil-society induced governance, mainly on voluntary basis with private autonomy. Informal regulation means bottom-up informal rules, goals and targets: application can however be multi-level. Like interactive governance, partnerships shape collaboration with high regard for legitimacy and autonomous private contracts.

3.2. Private sustainability initiatives: greening global commodity chains

Sustainable governance dynamics on the global level are essentially meta-policies, global governance efforts designed to guide multiple subsets of specific policies (Lafferty, 2004). On the level of implementation in the global value chain, specifically focusing on the market activities of production, a meta-policy vision can influence market-based sustainability practices considerably. The global SD-governance dynamics intertwine with the chain-level activities, which are in turn influenced by national regulatory contexts (Dicken et al. 2001). For each chain, the stakeholders involved differ because of the unique institutional environments and organizational shapes (Ibid.). However, their international context requires the national organization differentiated per country to be embedded in networks with control mechanisms residing elsewhere in the commodity chain. The standardization of SD-related efforts is therefore essential in gaining a foothold within any type of governance shift on the global chain level. On the global chain-level, market-based sustainability standards and certification schemes are now becoming increasingly important in business practice (Schepel, 2005). These voluntary corporate efforts to green commodity chains are essential governance tools in moving towards greener business practices (Mueller et al., 2009), while simultaneously promoting a shift from traditional government-based regulation towards corporate self-governance (Maxwell et al., 2000).

3.2.1. Self-governance and market authority

The rise of voluntary sustainability initiatives by corporate actors has brought much opportunities to addressing the much needed sustainable transition in commodity supply chain systems around the globe (Barry et al., 2012). Because of this increased importance, this thesis will focus on the gradual shift towards self-governance, with particular interest towards the private initiatives in the form of sustainability standards and certification systems on a global trade level. Market influence on the governance for SD has gained particular prominence in the greening of global commodity supply chain systems (Humphrey & Schmitz, 2001). This increase in private environmental governance has shifted the way in which public issues are addressed, focusing less on state-centric solutions and more on cooperative efforts by civil society to attain a more sustainable future (Falkner, 2003). The traditional sovereign decision-making bodies (i.e. governments) are not granted authority in these new governance systems, since the policy-making opportunity lies with other non-state market-driven (NSMD) authorities (Cashore, 2002). However, it must also be noted that “*the governing capability of global civil society complements but does not replace that of the state system*” (Wapner, 1997, p.43). The authority in NSMD governance structures is sourced from market incentives, as well as the pressures and influences by non-market actors: Table 2 provides a comparison of the sources of authority granted by the traditional (governmental) and NSMD governance structures.

Comparison of NSMD Sources of Authority

Features	NSMD Governance	Shared Private/Public Governance	Traditional Government
Location of authority	Market transactions	Government gives ultimate authority (explicit or implicit)	Government
Source of authority	Evaluations by external audiences, including those it seeks to regulate	Government's monopoly on legitimate use of force, social contract	Government's monopoly on legitimate use of force, social contract
Role of government	Acts as one interest group, land-owner (indirect potential facilitator or debilitator)	Shares policy-making authority	Has policy-making authority

Table 2. Non-state market-driven (NSMD) sources of authority comparison (Cashore, 2002, p.504)

The shift in authoritarian rule towards a voluntary market-based incentive-structure provides opportunities for regulative corrections on a non-judicial basis. The state's authority is not used to enforce compliance in these private governance systems. Whereas governmental regulations are based on the possibility of coercion, NSMD-governance systems are based on persuasion principles (Pattberg, 2004). But as Cashore (2002) logically questions, just how exactly could private governance initiatives then actually gain rule-making authority in the absence of compliance control? Primarily, privatization of environmental governance derives its successfulness on the basis of morals and beliefs of rightness: “[a]uthority involves a surrendering of individual judgement, an acceptance of its dictates based not on the merits of any particular pronouncement but on a belief in the rightness of the authority itself” (Cutler et al., 1999, p.334). Another, more market-centered incentive for compliance with voluntary regulations, is adherence to consumer preferences or pressure by wholesalers, investors or competing firms (Khanna & Anton, 2002). Their combined pressure for sustainable alternatives requires corporations to move towards sustainable alternatives and make sure consumer preferences are met. However, some argue that despite the obvious ethical and moral grounds, consumers lack considerable economic incentive to choose for more expensive alternatives that would be more environmentally benign (Paavlova, 2001). Furthermore, a second market-centered rationale is to comply with the most stringent voluntary regulations *before* compliance is required in the future: first-mover advantage provides businesses with a competitive advantage (Nidumolu et al., 2009).

3.2.2. Green transitions in global commodity supply chains

Businesses are thus clearly benefited by accepting private voluntary initiatives as an incentive for greening their supply chain systems, which however does require serious organizational governance shifts towards a more sustainable system (Nadvi, 2008). As is explicated by Gibbon et al. (2008), the dynamic shifts in global value chain systems, product disintegration and re-integration through inter-firm trade, do not emerge out of nothing, but rest on a basis of strategic decision-making by corporate actors and other relevant stakeholders within the global commodity markets. The transitional process is always initiated by influential actors, whom have the ability to institutionalize and initiate new sustainable operation regimes within their supply chain systems. These global supply chain governance systems are shaped by market influences and management choices of business actors. The organization of global production is explained by Gereffi et al. (2005) as a binary structure.

Organization occurs either through market influences (outsourcing of activities for financial efficiency purposes), or handling management within or between companies. Business choices between in-house production and outsourcing of certain production activities are explained by transaction costs economics, specifically on the complexity of business interactions and the extent to which asset specificity is involved, i.e. investments in transactions. Grover & Malhotra (2003) add to this the involved governance mechanisms and structures, as well as (market) uncertainty. Especially this last factor creates a certain amount of risk for the involved companies: the uncertain nature of transactions influences both the coordination and corporate decision-making processes for the production of goods and services. The complexity of inter-firm relationships is reflected in the activities within supply chain systems, which have become fragmented over time and space. According to Gereffi et al. (2005), these systems are mainly dependent on three central factors, around which the theory for global supply chain governance should be built:

1. Complexity of information and knowledge transfer required to sustain transactions, particularly process and product specifications;
2. The extent to which codification of this information is possible and therefore can be transmitted efficiently;
3. Capabilities of suppliers in relation to the requirements of this transaction.

The control systems underlying these governance structures are of essential importance in making the shift towards a more sustainable global commodity supply chain structure. Within these systems, market and non-market actors cooperate in order to improve both environmental and social production conditions. Vermeulen (2010) refers to these systems as sustainable supply chain governance systems (SSCG-systems). SSCG-systems operate on different but interconnected management levels, from the individual firm level towards the global commodity chain level (Figure 2). Crucial within the interaction between the levels is the system of global dynamics, in which supra-national institutions and market actors collectively shape the governance systems within the value chain. On the level of the global commodity chain, a complex myriad of firms and governance systems creates the structure of production until consumer product use.

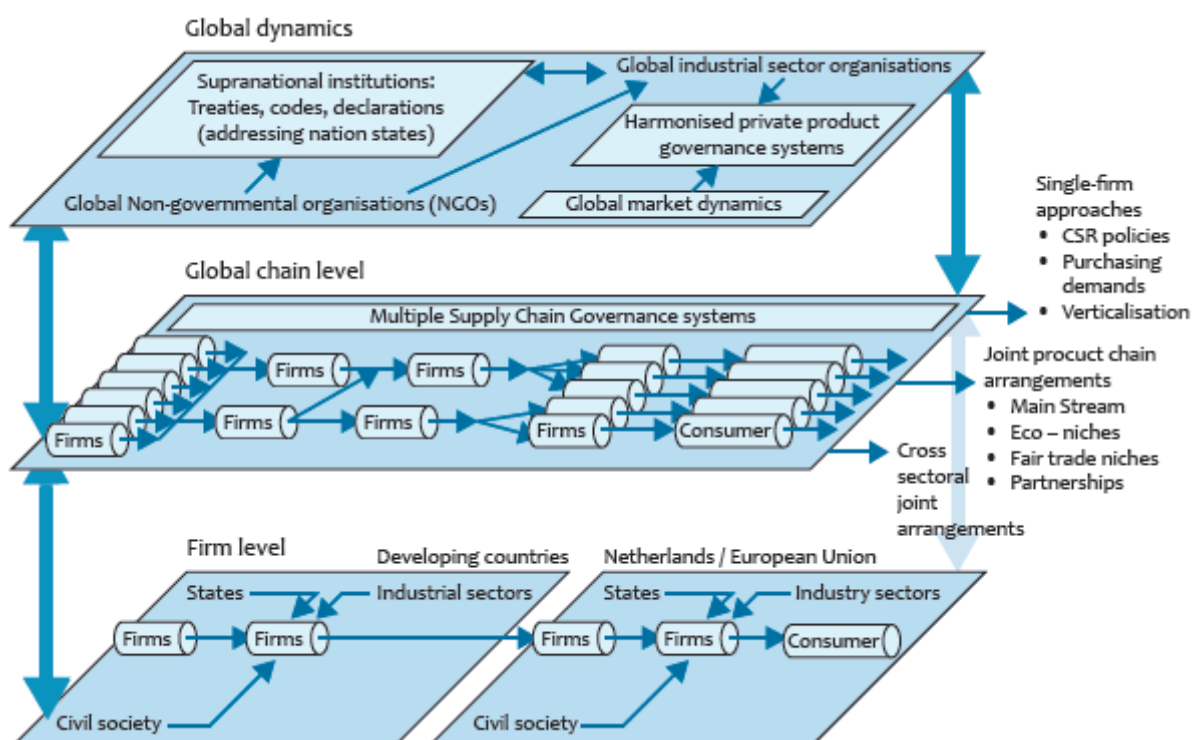


Figure 2. Global supply chain governance systems: three levels of analysis (Vermeulen, 2010)

The governance arrangements involved with the global commodity chains can be distinguished in three different approaches, each of which represent a developmental phase within the market-based voluntary sustainability initiatives of the commodity value chains (PBL, 2010; Vermeulen, 2010):

- Firm level – Individual companies taking lead market positions in the improvement of environmental and social value chain conditions. Single firm takes initiative to identify and analyze all chain suppliers, indentify solutions and implement changes and install compliance control. External stakeholders might question credibility of claims and reliability of self-control.
- Chain level – Despite differentiated development, inter-firm collaboration seems an essential feature in the second phase of initiative development (horizontal governance shift). Eco-labels require participants to enhance environmental performance within their value chains and install compliance control by external third-party actors (sometimes firm-induced to reduce transaction costs). New stakeholders emerge: labeling and auditing organizations, causing the sustainability market claims to have increased legitimacy and trust.
- Global cross sector – Recent developments of SSCG-structures go beyond specific products or sectors, allowing cross sector partnerships to emerge and a wide range of production systems can be addressed with similar governance tools. Greening supply chains is used as instrument of competition and differentiated stakeholder roles are emerging. Network governance structures emerge and sustainability initiatives, often being a firm-NGO collaboration, provide the ability to improve sustainable quality and performance in both developed (consuming) and developing (producing) countries.

The development of SSCG-systems over time signifies the rapid increase in complexity and effectiveness of market-based voluntary initiatives, as well as the interconnectedness of multiple actors and stakeholders with these governance structures. Van Kersbergen & Van Waarden (2004) see a clear vertical governance shift as result of this increased interconnectedness. National governance influence, under the pressure of globalization and technological advancements, is now gradually moving towards “*international markets, multinational corporations, [and] agencies that regulate international economic transactions*” (p.153). The increasing globalization of governance also causes a downward vertical shift, creating more opportunities for regional and local agencies to create and implement their own (localized) regulatory systems. These vertical movements show that the governance of SSCG-systems is still very much in a transition phase, and not all changes are perfect from the beginning. Newell (2001) argues that large corporations still require significant amounts of pressure from NGO’s and regulatory bodies in order to increase their environmental performances. While external stakeholder confrontation is a great motivator for corporate change, especially under consumer pressure, the responsibility still resides with the market.

3.2.3. Leverage points: Barriers and opportunities in attaining sustainable commodities

Moving towards SSCG-systems involves considerable steering efforts from a multitude of relevant actors within the value chain. Several leverage points in attaining this improved sustainability within global commodity chains are outlined by Clay et al. (2005). Focusing on the chain-level, they see the concept of sustainable commodities as “*industrial or consumer goods whose production, end-use and/or disposal have reduced negative, or potentially positive, environmental impacts relative to a substitute good providing similar function and utility*” (p.5). Shaping more sustainable commodities requires managing changes in production systems. The distinguished leverage points are essential

changes required within global value chains for them to not only become more environmentally benign, but also improve social and financial impacts of the economic activities within these global value chains. The most essential of these leverage points are (Ibid.):

1. ***Incentives and motivations for adoption of best management practices*** – Businesses act to make profit, which initially makes sustainable change problematic: any movement towards best management practices must result in gaining economic profit in order to make business sense. With sustainable change being a core business requirement and becoming increasingly important, efficiency and competitiveness are likely to be derived from the ability to become the most efficient in daily business practice.
2. ***Labeling of sustainable commodities*** – In order to be able to distinguish between conventional and sustainable business practices, the labeling of commodities is a tool used in order to increase transparency of sustainable activities within the value chain. The claims must however be legitimate, requiring the monitoring from a third-party actor.
3. ***Trade policy preferences to labeled sustainable commodities*** – Ensuring financial preference and viability of sustainable commodity market practices must be ensured through global trade policy agreements. After the system of sustainable commodity labeling is set up, trade preference towards these practices must be enforced through collective governance efforts.
4. ***Producer governments support to sustainable commodities*** – Despite the fact that change must come from the market, regulatory boundaries are set by governmental rule-making authorities. Especially developing (producing) nations must set their environmental regulatory standards higher in order to improve the internalization of externalities along the value chain.
5. ***Strategic alliances and partnerships*** – Sustainable market change happens in a network governance context. The interconnectedness of business practices in and between markets signifies the need for inter-firm collaboration in a long-term commodity chain system. Involving all relevant stakeholder groups in the sustainable change effort is the only way for any commodity chain to truly move towards a sustainable production future.

Building on the concept of leverage points, Doppelt (2010) applies sustainability shifts in the context of the individual firm-level. He uses the corporate shift towards sustainable practices as several thresholds a business must conquer in order to become more environmentally and socially benign in their actions. Governance towards this sustainable change involves a total of seven key leverage points (or steps) in shifting business practices of large corporations:

1. Alter corporate thinking, assumptions and beliefs that lead to current functioning
2. Alter the way planning and decision-making occurs by involving different actor views
3. Reorient the vision, goals and guiding principles of the organization towards a more sustainable path (apply to business activities)
4. Restructure the strategies the organizations uses to achieve its mission and goals
5. Shift the flow of information circulating through the organization towards sustainable vision
6. Improve the organizations capacity to learn (practice to achieve innovative change)
7. Embed the new vision, goals and strategies in standardized operating procedures and policies

Maon et al. (2009) provide a model framework for CSR implementation for individual businesses, ultimately aimed at the incorporation of a strategic CSR-integration plan for business practices (see Appendix 2). Their model is similar to the leverage points provided by Doppelt (2010), yet explained in a more comprehensive and complete manner. By embedding the stepwise shift within a strategic model overview, Maon et al. (2009) create a clear vision on the firm-based movement towards sustainable business practices. By differentiating between the internal CSR-implementation within the company and the external influence of stakeholders on this process, the processes underlying the firm-

level sustainability practices shift can be clarified. Generally, Lewin's (1951) three-stage model of change from *unfreezing* towards *movement* and *refreezing*, is expanded by a fourth stage referred to as *sensitizing*. Along these stages, influence from stakeholders through a continuous dialogue influences the firm-level shift process. Any corporate sustainability shift (after the obvious movement away from the status quo and movement towards the desired situation) must gain importance on a management-level, or to those people seeking to steer the company on the longer term. Sensitizing happens when resistance to change must be overcome, and those key people within the company must collectively set their goals towards (improved) CSR-management. The unfreeze or planning-phase mainly consists of assessing the current situation and context and envisioning the possible CSR-position within this context. By embedding a strategic plan into corporate practices and evaluating the changes in this movement-phase, room for improvement is created. Along the process of internal change (the do- and check/improve-phases), there is continuous communication on both external (to stakeholders) and internal (inside the organization) fronts. The refreezing phase, where new structures and institutions are settled and partnerships and production processes have taken shape (Maon et al., 2009), is the phase where CSR is mainstreamed. Corporate sustainability systems and action are institutionalized in business practice and essential of the business values and culture. This is continuously communicated, just like in the movement-stage. Refreezing does however not imply stagnation: constant learning processes continue to shape corporate actions and evolve the company (Bell et al., 2002).

3.3. Moving towards sustainable change: the role of multinational corporations

As is reflected in the complexity of global supply chain systems and their organization, the underlying power-structures driving the shift towards a more sustainable global commodity trade involves considerable threats and limitations, as well as some opportunities (Dauvergne & Lister, 2010). Multinational corporations' (MNC's) role within the complex structure of governance for SD has become increasingly important due to concentration of power among a very few important corporations.

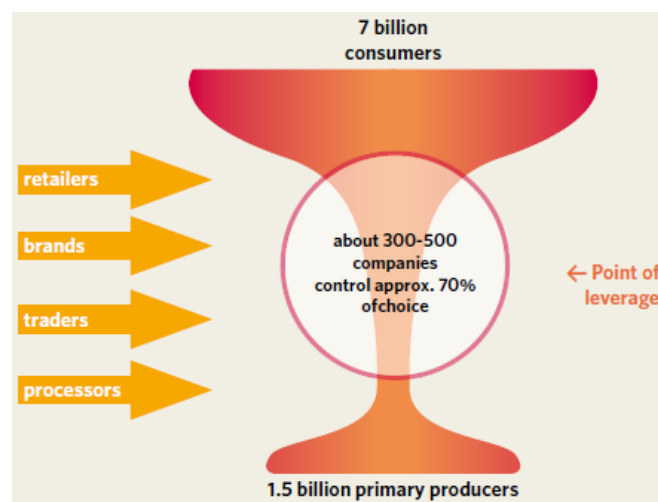


Figure 3. Large MNC's as crucial facilitators of changing commodity value chains (WWF, 2012, p.23)

With the increased urgency of sustainability issues on the global political agenda, the key MNC's, those few corporations influencing a major part of global trade, have become a crucial actor group in attempting to solve some of these SD-related global problems (WWF, 2012). Especially with the failed political attempts to solve major issues like climate change on the global political stage, the real struggle for change is now increasingly in the hands of MNC's (Dauvergne & Lister, 2010). The theory behind this rationale lies in the fact that commodities often have a large number of primary producers, whom eventually will sell their product and thereby converge these commodities into a

small ‘bottleneck’ of processors, traders, brands and retailers that have collective control over the entire production process as a result of their buyer power (Figure 3). These are usually large MNC’s with significant market share within their specific branch of industry.

Meadowcroft (2007) argues that the complex interactions between industries and the myriad of governmental organizations and institutions has created a situation in which the power to steer towards more socially preferable production requires radical governance shifts. The globally distributed power involves a collaborative effort from crucially important MNC’s and the governmental bodies, which should cooperate in their governing actions to further green commodity chains (Dauvergne & Lister, 2010). Their complex interaction structures, as well as the governance shifts needed in order to bring about sustainable change, are among the central issues treated within the theory of change in the context of greening commodity chains. However, it is also argued that the power structures and their dynamics within the value chain itself must be understood first (Ibid.). Pietrobelli & Saliola (2008) argue that the firm interrelations along the value chain have implications for the type of governance and regulatory organizations that are formed in each of these commodity production systems.

3.3.1. Environmental upgrading and change in market governance power

Of the interrelations within any SSCG-system, the process of environmental upgrading, being the improvement of sustainable performance along the value chain, is a key feature within the greening of the commodity chain. This process of upgrading often takes place in a global context along the entire governance system, whereby all firms within the value chain are impacted and transformed. The world’s biggest MNC’s are often the market actors with the greatest amount of private governance power, thereby making them immensely important within greening the commodity chain systems. However, this also brings about significant challenges for global environmental governance (Dauvergne & Lister, 2010). Understanding these challenges is specific for each commodity chain, thereby making it difficult to pinpoint the exact challenges in the context of precious mineral mining. However, a general challenge is bringing back the power to international relations actors, making greening commodity chains less dependent on a small amount of large corporations (Ibid.). On the other hand, the concentrated governance power does have the opportunity for fast-paced greening shifts when these powerful corporations are involved with true green SSCG-system change. Finding the correct balance in where transformative power should be, still seems to be a key issue within the theory of change (Pietrobelli & Saliola, 2008).

While traditional views see ‘northern’ MNC’s as driving forces behind the sustainable market transition, it is often also the local or regional ‘southern’ companies driving the sustainable change in their production systems (Jeppesen & Hansen, 2004; Vermeulen, 2010). Producing companies in developing countries, often being at the initial production phase within commodity chains, have the potential to play a major role in regulating the production systems within their industry when governmental institutions fail to do so. Now that economic globalization has gained importance, MNC’s and local producing companies increasingly collaborate in shaping the “*market-driven upgrading process, [which] is likely to gain importance in the future*” (Jeppesen & Hansen, 2004, p.262). Of the three major market tools shaping these market-driven SSGC-systems, standard setting is among the most common and important tools employed (the other two tools being technical collaboration and monitoring and control).

3.3.2. Theory of Change (ToC) in the context of global voluntary sustainability initiatives

Knowing the background of power transformation towards market-based initiatives fueled by a few important MNC’s, application of the theory of change in the context of standard setting initiatives

brings us closer to a useful framework which we can apply to the research. Gaining understanding of the basic components and the process of value creation (Figure 4) of standardization is a key step in this respect. This process functions on the basis of best practices implementation, which should be underlined with a credible claim which is checked by an independent organization. When assurance of the claims is met, the created added value to the production process should theoretically result in an increase in consumer demand. The rise in demand logically creates economic incentive for supply increase of the sustainable product in order to meet this demand, further greening the product chain.

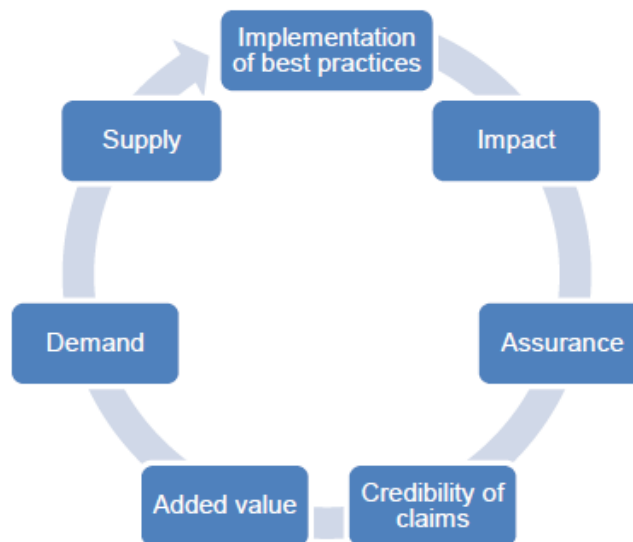


Figure 4. Standards value cycle explaining sustainable market change theory (Molenaar et al., 2013, p.25)

The basic theoretical assumption in the context of change-theory is “*that when the standard is complied with, negative social, environmental and/or economic impacts will be mitigated and positive benefits will be created*” (Molenaar et al., 2013, p.25). While the sector- and firm-specific application of standards might deviate for each case, there are some basic characteristics which can be distinguished in general (Ibid.):

- **Provide a governance platform** – Creating a dialogue between different stakeholders aids coordination towards the formulation of a collective sustainability vision. Network governance can provide solutions and knowledge (Palpacuer & Parisotto, 2003; Vurro et al., 2009) and involvement of multiple actors can create trust (Ponte & Gibbon, 2005);
- **Operationalize sustainability principles** – Defining the environmental, social and economic criteria around which the standard is built is at the core of the sustainable functioning of a standard. Clear operationalization and consensus building in order to legitimize this operationalization is a key feature in sustainable functioning (Giovannucci & Ponte, 2005);
- **Support implementation in business practice** – Creation of incentives for implementation of sustainability efforts in business practices is required for widespread application of this voluntary tool. This can be created internally on moral or economic grounds, or externally on grounds of consumer or NGO pressure (Aguilera et al., 2007);
- **Verification and accreditation** – Conforming to voluntary regulations happens in a competitive market-context, which makes it essential for any sustainability claim to be checked for its credibility. Assurance mechanisms such as certification schemes by third-party actors are the most common tools employed (O’Dwyer & Owen, 2005);
- **Transparent commodity chain systems** – Improving the traceability of production along the value chain is a central requirement in checking whether the sustainability statements made

are truthful or not. Tracking components back to their original source allows for credibility and legitimacy of the standard and its application (Auld et al., 2010);

- **Provide competitive market value** – Communication of sustainable performance to consumers might improve the competitive position of certain businesses over others (Porter & Kramer, 2006). Product labeling might provide further clarity about the standard and its application to specific products (De Boer, 2003).

With these basic characteristics behind the ToC in mind, it is possible to construct an overview of relevant strategies, outputs and impacts of the market-based sustainability standards. Figure 5 shows the theory of change behind these standards, differentiated for the relevant levels of scope embarked upon in this theory section (global dynamics, global chain and firm-level, respectively). The schematic overview model, usually adopted within ToC, provides in a pragmatic way the movement from employed strategies towards outputs and impacts. This stepwise approach is a common way of visualizing TOC-models. It is applied here to the market-based sustainability initiatives.

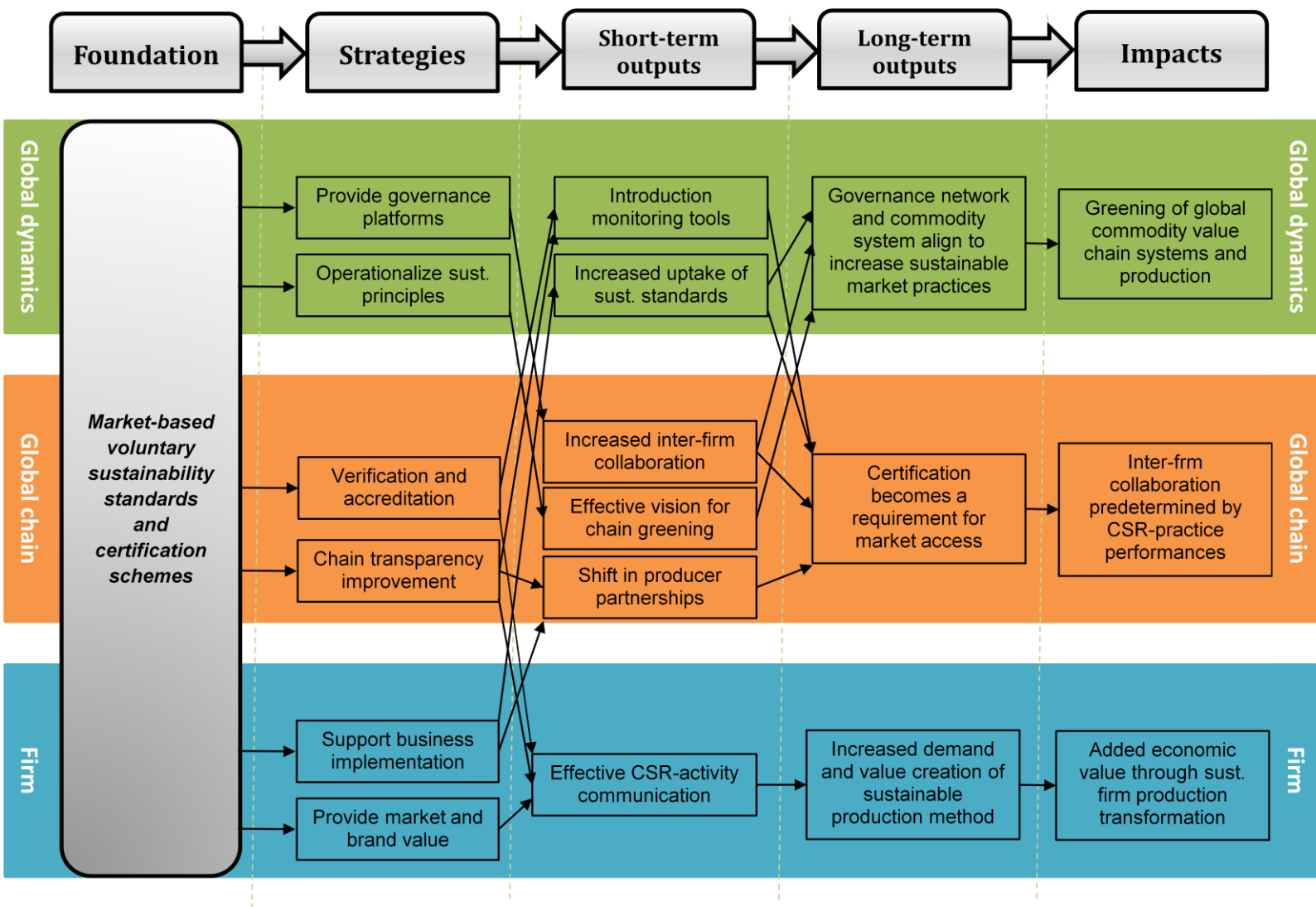


Figure 5. Theory of change for the three relevant levels of analysis, i.e. global dynamics-level, global chain-level and firm-level change factors (simplified schematic overview)

3.4. Theorizing sustainable mineral commodities: overseeing interactive dynamics

Looking at the different theoretical approaches within the research framework, the application to three interconnected levels of scope creates a complex theoretical background framework. Using the scope levels of global dynamics, global chains and individual firms, this theoretical framework attempts to grasp some of the most essential theoretical features needed in order to create a sensible research toolset. The governance shifts on the global level towards market-based self-governance provides opportunities for a change with a basis rooted in sustainability standards and certification schemes. Sustainable development dynamics create power shifts and require interconnected governance efforts between multiple governmental and non-governmental institutions and organizations. Empowering supranational institutions and NSMD-governance structures in a collaborative effort allows for the movement towards structural change on the global chain-level. The precious minerals value chain systems need to be leveraged into sustainable production systems, for which economic incentives should be clarified and encouraged among the relevant players in both producing and consuming countries. The theory of change provides a clear perspective for moving towards this sustainable goal: few companies are powerful enough to encourage change within the entire production system by their inter-firm collaboration choices. A clear vision for sustainable standardization could move single firms along the value chain towards more environmentally and socially benign business practices. On the firm-level, with internal sustainable change motivations competing with economic motivations, businesses increasingly incorporate CSR-based governance systems in their management structures. However, as is emphasized by the long stepwise path which is required for internal business change, this shift certainly is a difficult one.

Capturing this sustainable business practices shift on three different levels of scope (being the global, commodity chains, and firm-levels) is key to beginning to understand some of the difficulties involved in bringing about this change. Essential seems to be the understanding of the market trends and dynamics as a first step to gaining understanding in the transformation of the precious minerals markets towards the adoption and implementation of voluntary sustainability initiatives. With expected long-term demand increase as a result of global consumer prosperity and population growth, mining companies are in for a rough ride. The finite precious mineral resources are increasingly difficult to obtain, let alone increase primary production levels. The scarcity of resources calls for a drastic global system shift in terms of production systems. Incorporation of CSR-business practices with increased demand, and therefore increased primary production where possible, does seem like an essential first step in solving some major problems in this business sector. Changes resulting from the adoption of these sustainable business practices are drastic. On the global level, the introduction of sustainability standards is likely to create business possibilities and impact demand trends. For the respective commodity chains, CSR-performance increase is likely to restructure systems and business interactions. Producing nations are expected to benefit from a possible sustainability shift, which is especially favorable for resource-dependent nations such as Namibia. The position of such countries relative to the global market will most certainly see some changes, which is why a case-study into these dynamics is worthwhile endeavoring in. However, clarification of the markets and their CSR-performance, as well as assessing the currently available sustainability standards within the mining industry is likely to also clarify a great deal of the complicated puzzle. Understanding the implications of moving towards sustainable mining practices for resource dependent nations such as Namibia are likely adding to the theoretical foundation required to uncover this both scientifically relevant and societal important issues.

- PHASE 1 -

MARKET ANALYSIS

-

**Market trends and trade dynamics in the global precious
minerals mining sector**

4. Key market trends and trade dynamics

This chapter goes into the most essential global market trends of the international trade in precious minerals. The focus of this analysis will be on three mineral commodities: gold, platinum and diamonds. Through exploring market issues and potential (sustainability) problems, CSR-related issues, interactions with societies and governmental influence on these markets (Clay, 2004), a clearer picture can be drawn of the trends and dynamics at stake within the respective mineral commodity markets.

4.1. Market context and background

In order to be able to understand a market, the mechanics and major factors influencing this market will need to be addressed first. As with any commodity market, the prices of precious minerals on the international market are influenced by the differences between the quantity of the commodity being supplied and demanded (Radetzki, 1989). Econometric explanations tell us that there are several factors causing these quantities (on both sides) to shift over time. The basic determinants of the prices within the markets are shown in Figure 6, based on a study by Radetzki (Ibid.). By taking a brief look at these factors, we will get a basic idea of the mechanics behind the price dynamics which are influencing the international precious minerals markets. On the supply side, main price determinant is the variability in operations costs, which is forecasted according to available capacity (reserves and extraction capacity), as well as previous price dynamics and future market price expectations. According to Radetzki (Ibid.), it is the (dynamically shifting) market price of the commodity that mediates between the total precious mineral supply and the quantity of the mineral which is demanded by consumers. The volume of mineral use demanded by consumers might decrease when substitute minerals get cheaper, or (conversely) might increase when substitutes get more scarce on the market. Volume of use might also increase due to expansion of industrial activity, or shifts in market pricing.

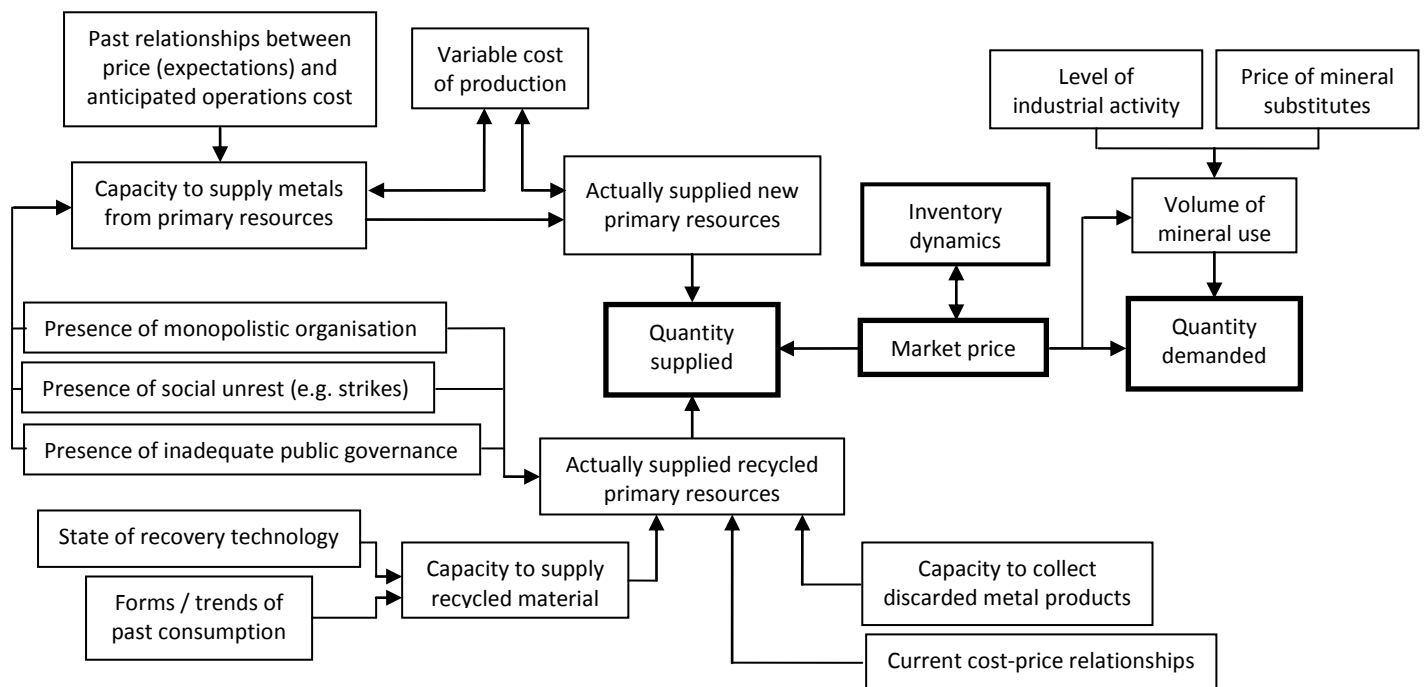


Figure 6. Schematic overview of factors of influence on differences between quantity supplied and demanded (mediated by market price) in global precious mineral markets, factors extracted from Radetzki (1989)

A recent notable example of market pricing effects and increase in industrial activity on volume use is the significant rise of gold demand as a result of gold price reductions on the Asian markets, particularly China (World Gold Council, 2014). While China's supply has been under pressure due to "a massive drain of inventory" (p.2), the World Gold Council has seen a true gold rush in the upcoming Chinese markets. The inventory buffer is of crucial importance to meet sufficient supply: precious metal markets often hold large inventories in order to be able to meet this demand while keeping prices on the right level. This is especially true in markets like the diamond market, in which supply is determined through cartel-formation of several large corporation consortiums (Gupta et al., 2010). These monopolistic organizations are able to influence global supply through their market power, by e.g. flooding markets with their large inventory reserves (Kretschmer, 1998). Next to monopolistic organizations, Radetzki (1989) argues that the influence of social unrest in the value chain, such as strikes, can negatively influence the supply quantity as well. Furthermore, inadequate governance of public actors is a major negative factor in production and market development possibilities, especially on the national level (Ibid.).

Next to the extraction of mineral resources, another supply-source of primary resources originates from recycled products and materials extracted from these products. There is a range of factors influencing the actual quantity of recycled material supplied on the market, mainly focusing on the capacity to recover old scrap and optimally reuse the precious materials. Major sources of recycled precious metals include electrical and electronic equipment (Chancerel et al., 2009) and scrap from automobiles (Yong et al., 2008). There are quite some constraint factors on the capacity to collect and supply recycled materials, which are either of practical or organizational origin. Practically, the state of recovery technology and the way in which metals are used in products (i.e. their recyclability after the use-phase of the product) determine the influx of recycled materials. The organizational constraints involve the capacity of collection of these recycled materials, as well as the financial issues attached to this collection operation. The recovery of recycled materials should be profitable in order to compete with the influx of new mineral resources (which is, as stated before, heavily influenced by the variable cost of production). Obviously, the organization of recycled material supply can also be negatively influenced by social unrest, governance incapacity, or firm power influence (e.g. monopolistic firms keeping control over the market).

4.2. Supplying precious minerals: future issues

While the supply-side factors in the schematic representation (Figure 6) are all of critical importance in the availability of precious minerals on the global market, there is a crucially important implicitly presumed factor still missing from this overview as inspired by Radetzki (1989). The precious minerals mined today are irreplaceable: societies functioning is dependent on their availability, both in social and economic perspective (Prior et al., 2012). With the coming of the industrial revolution, the depletion of natural mineral resources has rapidly increased. This lead many scholars to argue that a point of no return is coming, i.e. 'peak minerals', in which the maximum economically recoverable amount of resources is extracted from mines around the globe (Mudd & Ward, 2008). However, some disagreement still exists about the way in which this peak minerals-point will be reached. The mechanism of recovery and reuse (see recycled primary resources in Figure 6) might compensate for the reduced stocks of mineral supply (Willett, 2002). Richards (2006) argues that only a serious revaluation of resources could create a more sustainable market situation in the long run. The market prices should fully reflect the internalized costs of production, including the cost of replacement of these resources. Following Prior et al. (2012), the pricing mechanism, accompanied by technological advancement, might be another major influential factor in the speed at which peak minerals is reached.

4.2.1. Pricing and recyclability issues of peak precious minerals

The concerns over peak minerals might have serious impacts on the price dynamics of the precious minerals in the future. A reduced supply capacity might disrupt the markets, since replacement of precious minerals with a substitute metal might be difficult (May et al., 2012). Whereas ‘regular’ minerals and metals are replaced when peak production causes prices to soar (Richards, 2006), precious minerals have specific intrinsic values to consumers which does not allow them to be substituted so easily. The lack in the ability of precious mineral substitution creates a serious problem when peak supply is reached. The prices of precious minerals are already soaring in recent years (Figure 8), suggesting that future prices of these minerals might be expanding towards incredible height. One of the few solutions put forward is the concept of total recovery, wherein precious or scarce minerals are completely recycled after their use by consumers (Dodson et al., 2012). This would suggest that the recycled primary resources would be the main influx of supply for precious minerals in the future. However, the ability for recycling minerals depends on its previous-life end use and the economic viability of recovery when trace amounts of product are used (May et al., 2012). The economic viability is in turn influenced by the prices of the mineral commodity itself, as well as the price of recovery of the material. This knowledge allows us to expand the schematic overview of factors provided in Figure 6, with some additional factors of influence (Figure 7).

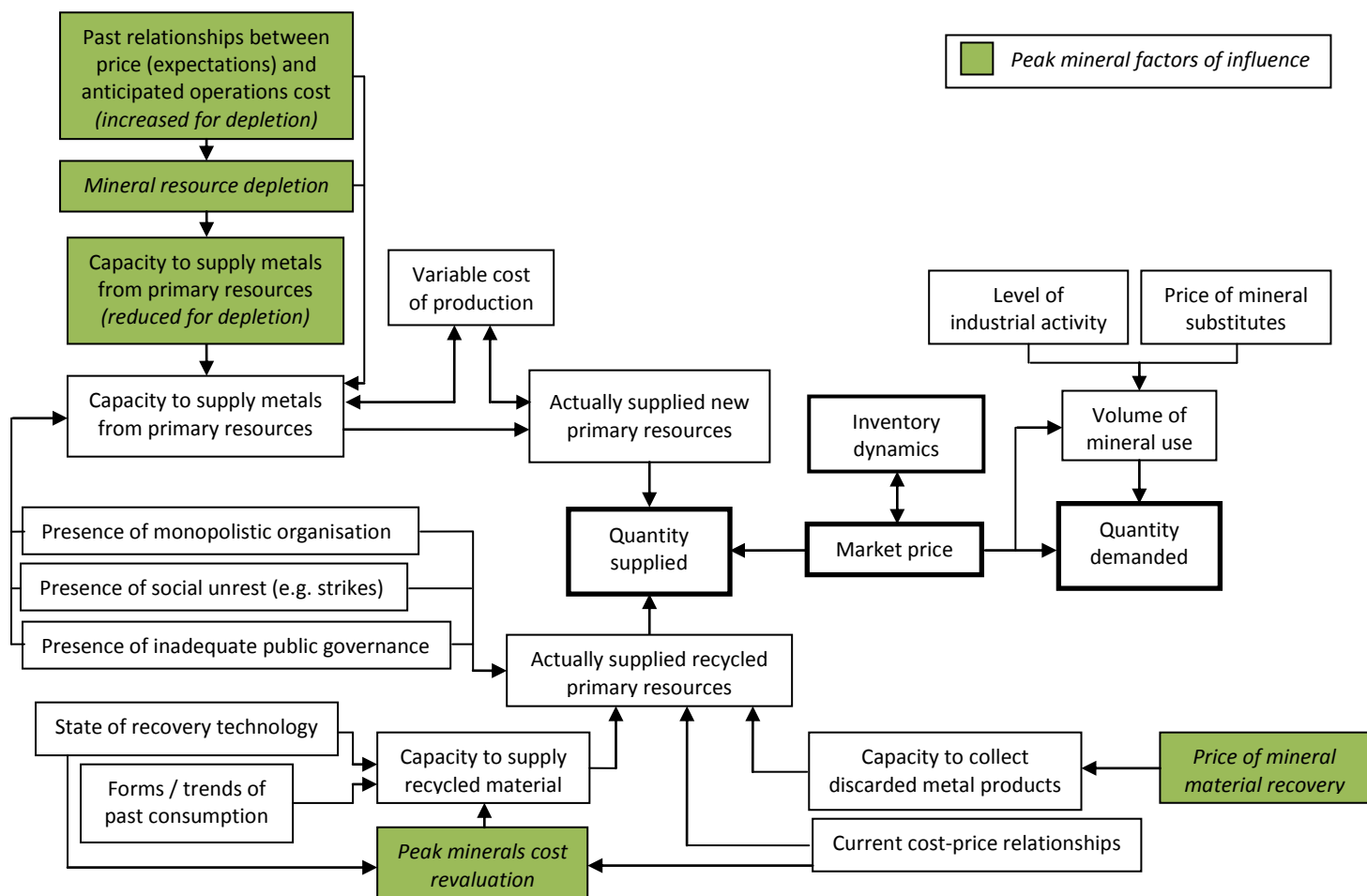


Figure 7. Schematic overview market dynamics as based on Radetzki (1989), expanded with peak mineral factors that influence the price dynamics (coded in green)

4.2.2. Precious minerals market: price trends

The market for precious minerals can be seen in two ways, which are essentially two intertwined markets (Batten et al., 2010; Cooney et al., 2008). Market prices are determined by both the physical commodity and the trade therein, which can be seen as the first market. The second market is the financial one, highly influenced by the past price relationships and existing inventories (Radetzki, 1989). This financial market is mainly changing as a result of risk and prediction of future events (Cooney et al., 2008). Predictability of market prices is highly valued in this market: risk is mainly transferred within the value chain in order to ensure a stable cost structure, thereby reducing the possibility of market price volatility. Historical price trends in precious minerals markets show a considerably large increase in global prices in the last decade, as can be seen in Figure 8.

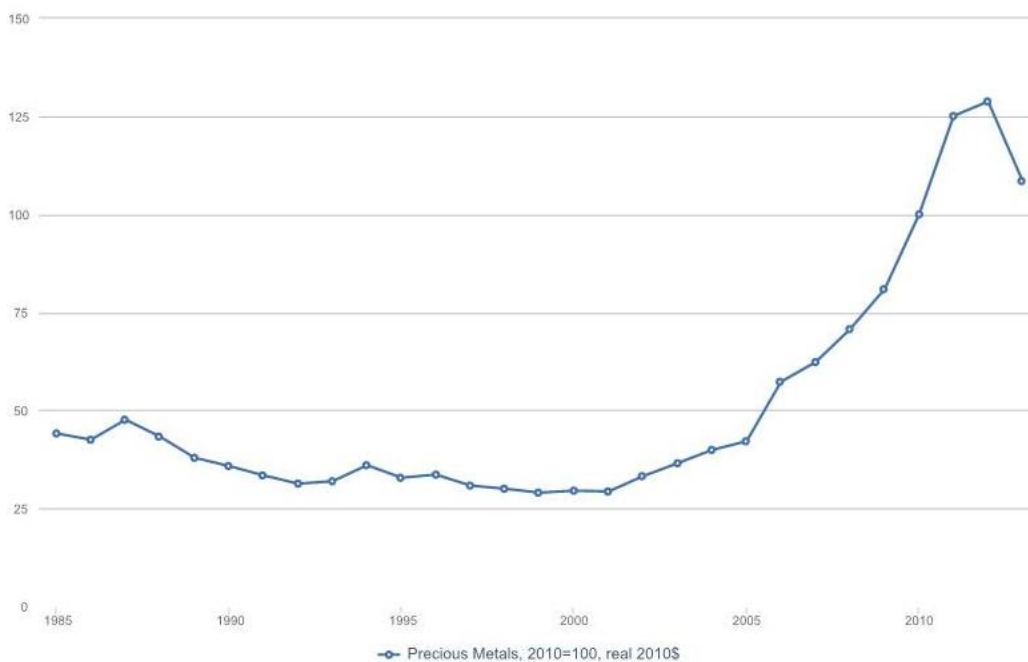


Figure 8. Precious minerals (platinum, gold, silver) global real prices, base value 2010 (World Bank, 2014a)

An explanation for this upwards price shift can be sought in several factors of influence. Rogoff (2010) argues that the dwindling dollar price has been responsible for much of the increase in the past decade: the rising US deficits and fiscal policy have caused the dollar to lose most of its value and move investors towards the so-called ‘safe-haven’ of value, which is the investment in gold. The World Gold Council (2014) agrees with this statement, adding that the rise in consumer and value-seeking investor demand is a result of the economic crisis aftermath. Other precious mineral price trends deviate from this financial crisis-argument. Platinum prices have soared in a similar fashion to the price trends shown in Figure 8, yet were severely impacted in terms of value as a result of the same financial crisis. Figure 9 shows a clear discontinuous path around the peak of the financial crisis, around the years 2008-2009. This raises questions about the credibility of the claim that economically bad times cause prices of precious minerals to rise, yet might also have other causes. For example, recent dramatic increase of platinum investments have had a great influence on the demand-side and level of speculation with the commodity (Bloxham et al., 2013).

Another explanation might reside in the supply/demand balance of the commodities themselves. As has been shown in the scheme in Figures 6 and 7, market price is a mediation variable between these two parameters. Scarcity of available products can be a crucial factor on both sides of the coin here. The availability of substitutes might become increasingly important (Alonso et al., 2007), due to the

generally heightened demand as a result of population growth (WEF, 2009). However, as explained earlier, depletion of mineral resources is an increasingly pressing issue within the industry. Movement of extractive capacity to lower-grade ores is a short-run solution here: when resource extraction possibilities decrease, products with lesser quality are used. It is implying that when demand rises, prices go up and supply can still remain equal or move up, but with a lower ore-grade quality product (May et al., 2012). Whether this explanation is currently of influence on the market prices is arguable, however, in the long run the availability of high-grade ores will most certainly decrease and any short-term solution to that problem will be the movement towards lower-grade ores, as they are generally more abundant. May et al. (Ibid.) argue that this might be mediated to some degree by the improvement of more efficient extraction and prospecting technology. Since profitability in the mining industry is relatively low (Walker & Howard, 2002), any fluctuation in mineral commodity prices is problematic to some degree within the industry as a whole.

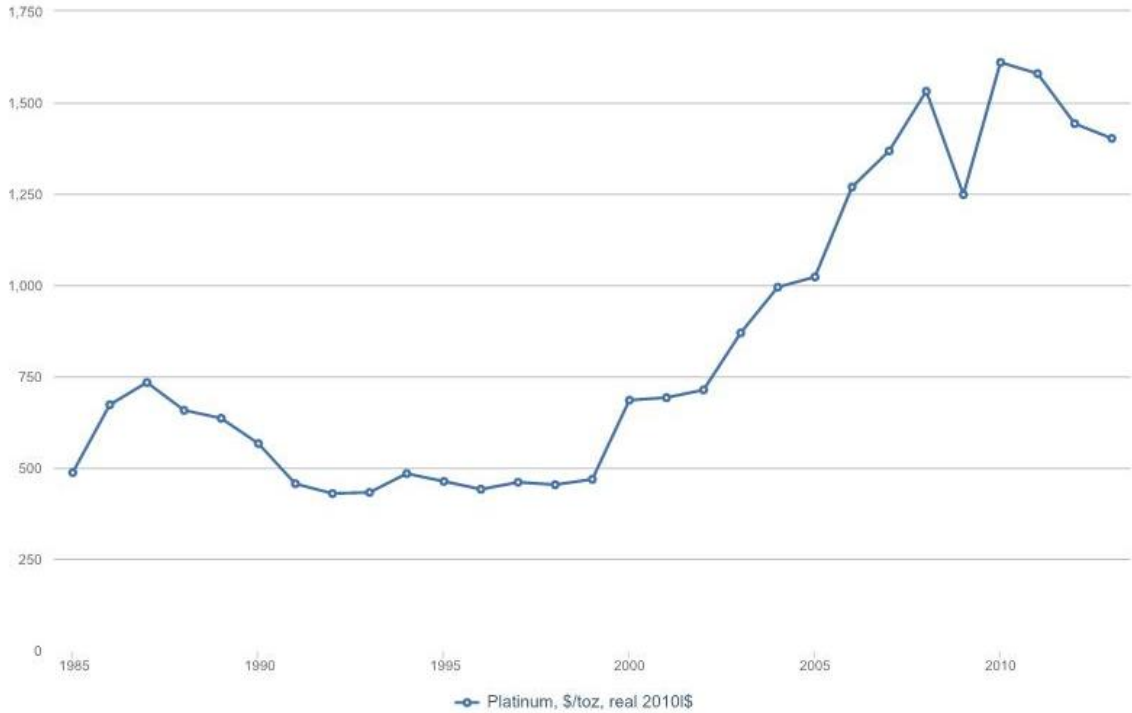


Figure 9. Platinum global real prices over time, base value 2010 (World Bank, 2014b)

4.2.3. Expanding the model: Supply and demand

The model put forward at the beginning of the chapter is slowly starting to take shape and we are now better able to understand the factors behind the market sustainability of precious mineral commodities. With the previous section elaborating on the price-trend issues, several new factors can be added to the overview. Figure 10 shows the schematic overview, including the price and supply issues which are likely to become a factor of significance on the market in the longer run. We must however also focus some attention on the demand-side, which as stated before, is equally important (yet less complex) to the long-term economic sustainability of the precious mineral commodity markets. The demand-side factors are much more difficult to predict as they are more prone to uncertainty and sudden changes than the supply-side (Humphreys, 1982). The peak-minerals scarcity increase can lead to demand increase because of speculation (Alonso et al., 2007). As the supply of precious minerals might decrease in the long-term future because of scarcity, demand in the short- and/or medium-term will increase when economic viability of increasingly scarcer primary resources fades. The ability for people to actually buy precious minerals also depends on “changes in the structural [...] composition

value to that of the gold price, volatility of gold has profound implications on the value of the gold reserves kept in the many national safe's of nation states. The recent economic crisis has created a lot of turmoil within the gold market: the volatility of investments in mining activities have been uncertain since the prices started shifting as dramatically as they did in recent years (Shafiee & Topal, 2010). The same global financial crisis has shown why gold is much different in its price behavior compared to other precious mineral commodities. Instead of a rapid price decrease, the use of gold as a safe haven for investors has actually caused the global gold price to dramatically increase (Ibid.). With global demand on the rise, uncertainty in mining investments for this commodity market could have long-lasting supply-demand balance effects, thus further driving up prices in the near future. This increasing price trend might actually lead to long-term inflation-issues, since Argitas (2010) explains that a positive correlation is found between the increase of money in a nation and the gold price. This implies that when price volatility continues to exist, uncertainty in currency trade continues to exist.

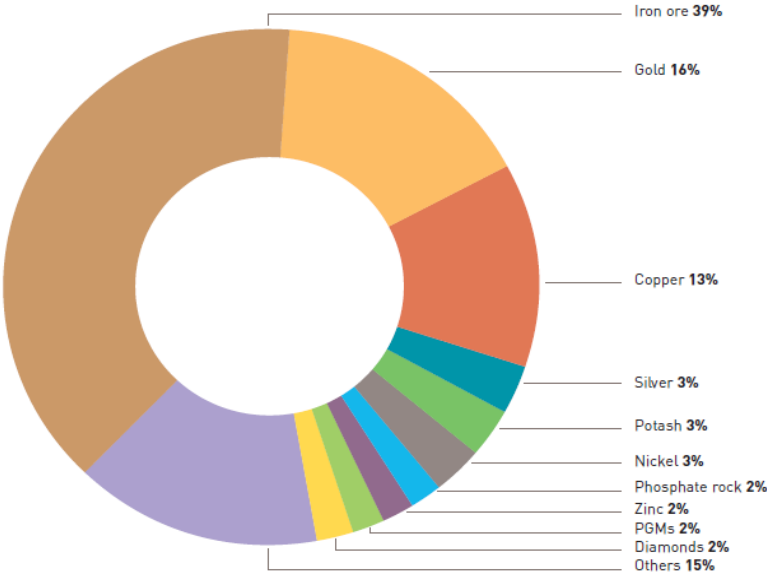


Figure 11. Market value of gold in context of other minerals (Ericsson & Hodge, 2012)

The historical price trends of gold as a commodity shows its increasing importance within the global economic system: the increased application and speculation of gold on the market has only been causing turmoil within the global gold prices for roughly 50 years now, while before this period the gold price was relatively stable and constant (Figure 12). While it would be interesting to analyze all fluctuations for the whole period of volatility, let us focus on the recent explosions of the gold price and the likely long-term trend for the price of the commodity. As explained, the major determinant of the sudden increase in the valuation of gold is the investment boom as a result of the global economic crisis. The asymmetric volatility pattern in the gold price over time can also be explained as a consequence of inventory drains, since price responds to available supply (Ibid.). When inventory stocks are high, the price lowers and the supply is secured, while in times of low inventory the price will spike upwards and with demand equal, the possibility to supply becomes more difficult. Furthermore, the linking of the gold value to the dollar price would explain the even greater price increase than expected, given the fact that the downfall USD-currency has been a major concern for the American, but also the global economic system (Obstfeld & Rogoff, 2009). As is explained by Tulley & Lucey (2007), gold acts as an ‘anti-dollar’, i.e. when the dollar loses value, the price of gold as a commodity goes up. Now that the storm of the financial crisis has somewhat settled down, the long-term price trends seem to keep on increasing despite the giant peak in the last few years. Shafiee & Topal (2010) give three reasons for this likely continued increase of gold commodity prices. First,

primary production has decreased in the last years and is expected to decrease further in the near and long-term future. Decreased reserves, increased operation costs and drawbacks in exploration are the most direct effects of this decrease in mining activities. Secondly, the investments in gold responds to uncertainty in commodity prices by keeping gold in their investment portfolio as opposed to other commodities, since there is a certainty that the gold price will either remain stable or go up in the long run. Gold is often described as a ‘safe haven’ for investors, since it is a relatively stable investments in terms of ‘shock effects’ on the investment markets (Baur & McDermott, 2010; Baur & Lucey, 2010). Finally, through new technical financial systems, it has become much easier to invest in gold and therefore demand has increased over time in recent years, and is expected to increase with the improvement of such systems in the near- and long-term future.

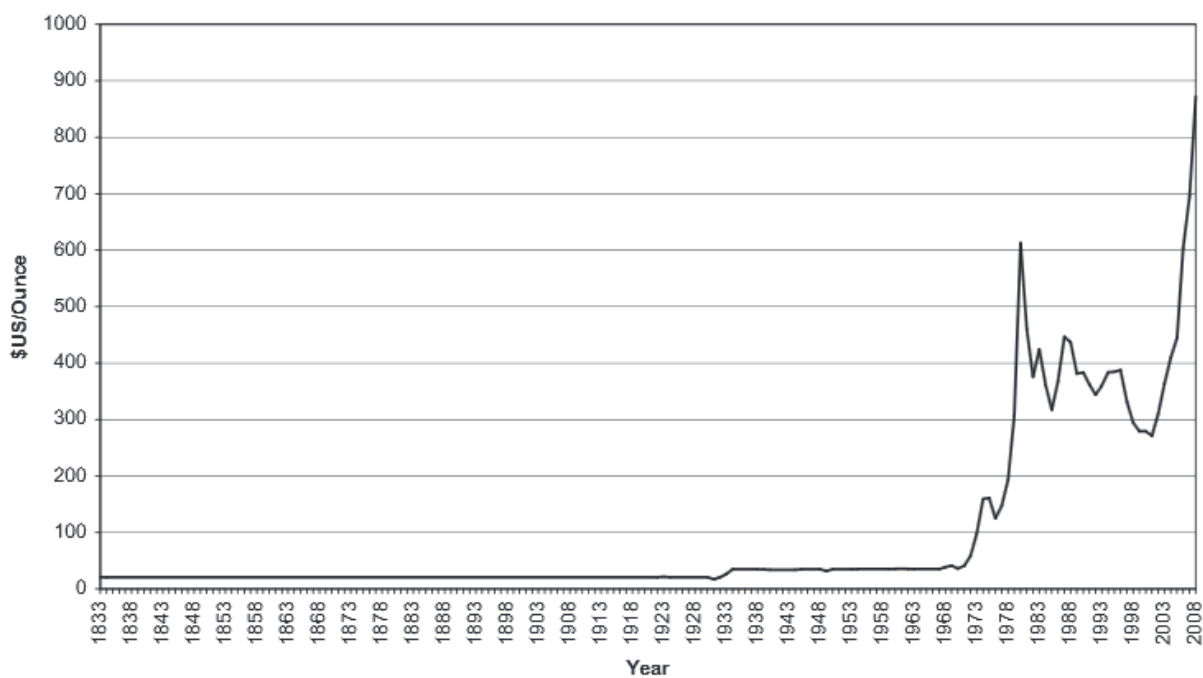


Figure 12. Gold price trends over time per US\$/ounce, 1833-2008 data (Shafiee & Topal, 2010, p.180)

Relative to other precious mineral commodity markets, the gold market is among the most dispersed in terms of mining activities. The market shares of the largest MNC’s are comparatively low, despite some companies still having a strong competitive position within the gold market (Table 3). The gold market has seen drastic price fluctuations for several decades (Govett & Govett, 1982; Baur, 2011), which has resulted from an investor environment of increased risk and volatility, meaning that investors would have more problems predicting their moves and making them more reluctant to investments in general (Baur, 2011). Nevertheless, the volatility on the financial markets is likely to increase the willingness of investors to focus their assets on the gold market due to its earlier explained ‘safe haven’ capabilities. By doing so, the risk in the financial markets is averted, however this risk is transferred to the gold market, consequently causing heavy price volatility for gold as a commodity. Baur (2011, p.9) therefore states that “*the price and the volatility of gold increase simultaneously*”, which he refers to as an “*inverted asymmetric volatility effect*” of the gold price. Or to explain this phenomenon in less technical terms: global financial problems force investors to move towards gold investments, increasing its global price and thereby creating volatility in the gold markets. This upwards price movement will essentially pull more investors to the gold market, as future price predictions within this market are positive: further driving up prices in a feedback loop.

This loop is however not infinite, since recovered financial markets can cause investors to gain more lucrative investment possibilities in other asset markets (Ibid.).

The World Gold Council (WGC, 2011) clearly explains the uniqueness of the gold market as compared to the other precious minerals markets. The functions and interconnections with the global economic system because of these functions causes the market dynamics to behave quite differently in comparison to other precious mineral commodities. Whereas platinum and diamonds mainly serve a technical function or are used in the jewelry-sector, gold also has the additional important role in the global fiscal system. This does however not imply that gold is less important in industry sectors as well: over half of the gold produce is used in jewelry and another considerable amount is used in technical applications (Ibid.). Gold's chemical and physical characteristics allow it to be applied in a multitude of different product uses, thereby greatly increasing its practical use.

Company	Annual gold production volumes 2012/2013 (approx.)	Global market share (approx.)	Source
<i>Newmont Mining</i>	5 million oz	6,25%	Newmont, 2013
<i>AngloGold Ashanti</i>	3.9 million – 4.5 million oz	5%	AGA, 2012a
<i>Goldcorp</i>	2.7 million oz	3,75%	Goldcorp, 2013
<i>Newcrest Mining Limited</i>	2.1 million – 2.3 million oz	2,75%	Newcrest Mining, 2013

Table 3. Large gold mining companies and their production volumes and market share

The other side of the coin is that the many functions of gold as a commodity also require a lot of mining activities, be it with their own negative side-effects. Mudd (2007a) argues that the involved environmental and social costs of extracting mineral resources, in particular that of gold, have been a major challenge for the industry. Since the extractive practices have always prioritized production over externality costs and impacts, the environmental and social consequences of extractive activities have historically been profound (Ibid.). The increased technological possibilities of extracting the gold dust, which is essentially very rare, have also aided in the process of increased environmental damage. The introduction of cyanide processing has increased the speed at which gold is extracted from the soil, yet also has caused many issues on the environmental side (Ali, 2006). While initiatives over the improvement of these externality effects have been profound, as now the consuming nations are actively involved in ensuring the correct and fair production of gold (Hilson, 2008). In the long term, the World Gold Council even predicts a beneficial effect of gold mining activity for developing nations, despite the problematic issues related to the 'resource curse', i.e. the externality problems in producing nations associated with extractive activities of these resources (Upton, 2009).

The large gold producers have been notorious for their environmental problems, such as is the case with Newmont Mining in Peru (Gifford et al., 2010). While Newmont Mining is one of the largest companies in the surrounding area, providing an economic impulse into the resource-rich regions of Peru, the environmental side-effects of its activities have had much negative impact on the regions where these activities took place. Considerable NGO pressure and the often problematic governmental protection of local communities have motivated companies like Newmont Mining to adopt a strict and extensive CSR-program (Gifford & Kestler, 2008). Involving local extractive MNC's to the well-being of the local region, thereby minimizing the externality damage, does however require in-depth knowledge of the communities and the local region. Involvement of the companies in the local community is an increasingly important trend as a result of this movement towards a better CSR-performance. These movements can also be seen in other MNC's, particularly in developed nations

such as Canada (Goldcorp) and Australia (Newcrest Mining Limited), but also in developing nations like South Africa (AngloGold Ashanti). Slack (2012) does however see an increase in CSR-performance statements made by extractive companies, but questions the implementation of the principles underlying the CSR-management systems. This is often due to the lack of a standard-definition of CSR in company activities, as well as the quality of implementation in especially the developing nations. Companies like AngloGold Ashanti, which are very active in the sub-Saharan African region, are outspoken in their CSR-reporting (AGA, 2012a), yet studies show that proper implementation in practice is often lacking or problematic (Emel et al., 2012; Kapelus et al., 2005). For the developed nations, the sustainability-related issues mainly focus on the mining activities that are allowed, which have a negative externality effect. Mudd (2007b) describes how the Australian gold production has historically seen an increasing environmental impact due to increasingly lower ore grade and open-pit mining activities. Large MNC's like Newcrest Mining have, despite stringent CSR-management policies, contributed considerably to greenhouse gas emissions and regional pollution. The movements within the gold market are mainly caused by these ore grades of the remaining reserves, which are gradually declining globally since the highest grade ores that are easily accessible are mined first (Prior et al., 2012). When higher-grade gold ores become less accessible for extraction, moving towards lower grade-ores and more difficultly accessible reserves will incrementally drive up exploitation costs (Mason et al., 2011; Sverdrup et al., 2012). The large MNC's in the extractive industry, despite already being quite dispersed in terms of production volumes, do not show significant shifts in production volume over time. The largest gold-mining MNC's all show a small decrease in the last few years of production, yet seem to set a relatively higher production target in the upcoming production years (AGA, 2012a; Goldcorp, 2013, Newcrest Mining, 2013, Newmont, 2013). For the application of gold in products the future is more pessimistic in terms of demand in some sectors: the jewelry use of gold has decreased 11% in 2008 and 24% in Q1 2009, thereby losing a considerable part of its application in this sector (Baur & McDermott, 2010). Obviously, this was more than compensated by the investor gold demand, which soared in recent years due to earlier explained market mechanics (Ibid.). The upwards trend of production rates have certainly not decreased due to the lower-grade ore trend: production is still increasing despite this decreased availability of high-grade and easily accessible ores (Prior et al., 2012).

4.3.2. *Platinum*

The market for primary production of platinum is largely based in a single country (Bloxham et al., 2013), thereby making national regulation and export dynamics essential within the market analysis. Most of the platinum group metals production takes place in South Africa, thereby making the supply from this country crucial on the global platinum trade stage (Figure 12). Up to 80% of all the exploitable platinum group metal (PGM) resources are found within this single nation (Baxter, 2014). South Africa has been a favorable country for mining activities, especially because a large degree of the nation's GDP is dependent on the extractive sector, up to 4.1% for platinum alone (Ibid.). Any global production growth will likely be the result of increase of extraction in South Africa, thereby making South Africa's national policies with regard to mining activities highly influential on the global PGM-market. Research suggests that there are plenty of known PGM-resources available in the country in order to sustain the supply (even the foreseen growth of supply) in the near-future (Mudd, 2010). However, as is also visible in the supply-section of Figure 12, also production in Russia (Noril'sk-Talnakh field) and several other minor producing countries are important, or at least relevant in the global platinum trade system (Mudd, 2012a).

The recent growth in PGM-mines is much needed due to a doubling in consumer use of platinum group metals between 1987 and 2002. Much of this use can be attributed to increase of use in Europe

and China, while Japan's demand actually decreased over time (Wilburn & Bleiwas, 2004). Bloxham et al. (2013) confirm this increasing demand trend, which can be generally attributed to an increased platinum-use for the production of catalysts for the automotive industry. This product group is responsible for the largest amount of platinum demand generally (Ibid.). The current production methods for the automotive industry is highly dependent on the continued supply of platinum, which would make South African mining companies a crucial link in the continued global mobility system. Other uses of platinum, such as jewelry and other types of technical applications (e.g. electronics) are also influential to some degree, but are almost negligible for the purpose of analyzing global platinum price trends. The use of PGM-resources for financial investment purposes is almost negligible in terms of perceptual demand, which certainly differentiates this commodities' demand mechanics from that of gold (Whitburn, 2012). Nevertheless, zooming in on the mechanics behind the catalyst converter (i.e. auto catalysts) market and the role of platinum therein will provide some insights into the likely global price path for platinum as a commodity.

Platinum Supply and Demand							
		'000 oz	2009	2010	2011	2012	2013
Supply ¹	South Africa		4,635	4,635	4,860	4,090	4,120
	Russia ²		785	825	835	800	780
	North America		260	200	350	310	315
	Zimbabwe ³		230	280	340	340	400
	Others ³		115	110	100	110	125
Total Supply			6,025	6,050	6,485	5,650	5,740
Gross Demand by Application ⁴	Autocatalyst ⁴		2,185	3,075	3,185	3,190	3,125
	Chemical		290	440	470	450	540
	Electrical ⁴		190	230	230	165	205
	Glass		10	385	515	160	235
	Investment		660	655	460	455	765
	Jewellery ⁴		2,810	2,420	2,475	2,780	2,740
	Medical & Biomedical ⁵		250	230	230	235	235
	Petroleum		210	170	210	205	155
	Other		190	300	320	390	420
Total Gross Demand			6,795	7,905	8,095	8,030	8,420
Recycling ⁶	Autocatalyst		(830)	(1,085)	(1,240)	(1,130)	(1,275)
	Electrical		(10)	(10)	(10)	(20)	(25)
	Jewellery		(565)	(735)	(810)	(890)	(775)
Total Recycling			(1,405)	(1,830)	(2,060)	(2,040)	(2,075)
Total Net Demand⁷			5,390	6,075	6,035	5,990	6,345
Movements in Stocks⁸			635	(25)	450	(340)	(605)

Figure 12. Platinum supply and demand by region and product application (Bloxham et al., 2013, p.30)

The product application of platinum is inherently linked to its global price trend path, more so than other precious mineral resources, which distinguishes this product group from these mineral

commodities. Because of platinum’s role in environmentally-related production processes, mainly those within the automotive industry (e.g. hydrogen fuel cells) and electronics industry (e.g. chemical process catalysts) (Mudd, 2012a), the concern about long-term PGM-supply sustainability is rising. The possibility of long-term supply shortages and related price booms, urges the industry to look for solutions, which the International PGM Association seeks in the secondary supply source, i.e. the recycling of PGM-resources (IPA, 2012). Moving towards recycling has additional advantages besides circumventing possible depletion problems, since it also allows for the improvement of environmental performance within the sector, as well as lowering of required energy inputs for production (Ibid.). In the short-term, global air emission regulation (especially in developing countries since they are lagging behind in regulatory enforcement) pushes the demand for platinum in catalyst converters in automobiles, as they decrease the exhaust gases and fumes from vehicles (Ibid.). This global trend of increased environmental regulation for cars has driven up platinum prices, causing a decreased uptake of platinum for the jewelry-sector (Forrest & Clark, 2006). Overall, PGM-prices have been rising for several decades, as can be seen in Figure 13.

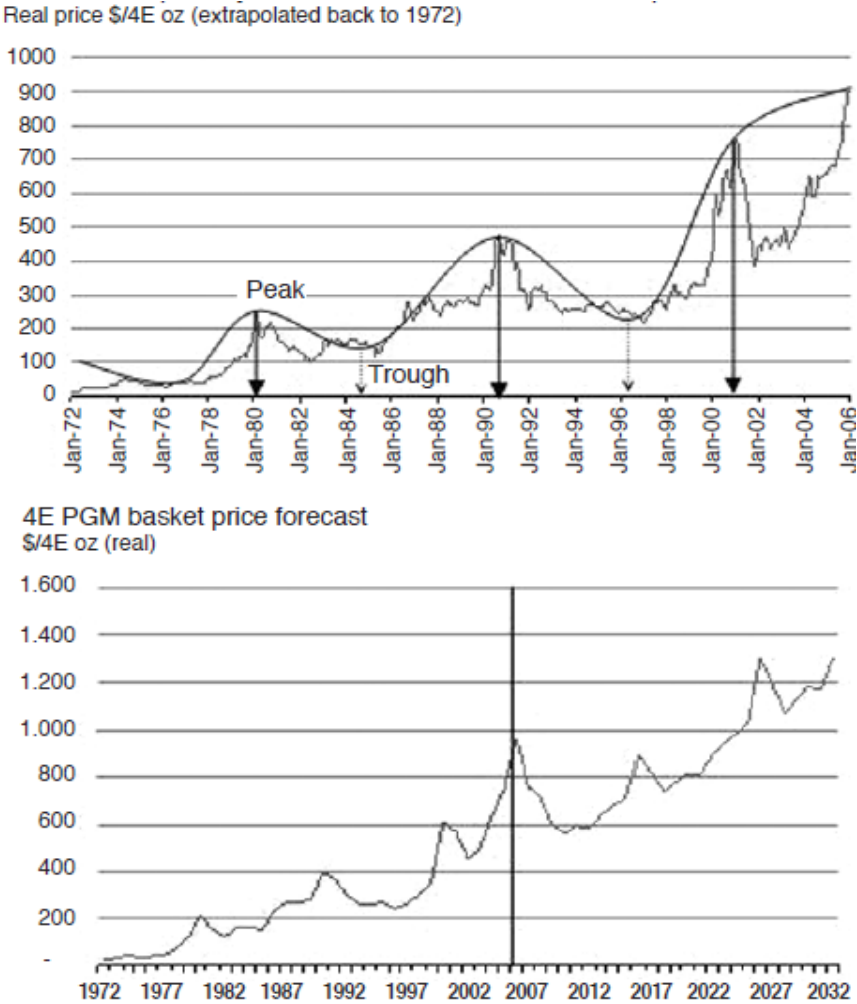


Figure 13. Price trends historical (top) and future price forecast (bottom) (Forrest & Clark, 2006, p.314)

This upwards trend is expected to continue in the future, with increasing demand and lagging supply in the medium- to long-term (Ibid.). While generally the cyclical rise and fall of global PGM-prices continues, there is a clear average rising trend visible from the data provided in the figure, which is based on the South African prices market-prices (real dollar prices per 4E oz-platinum weight units). This rising trend will continue its linear cyclical path upwards, mainly as a result of global demand

from upcoming countries (Mudd, 2012a). The forecasted global market price increase will definitely have a profound impact on the operation choices of the world’s largest platinum mining companies. By means of effective risk management, these companies are able to survive despite foreseen price developments, as well as maintaining sufficient supply.

The price trends have already been responsible for some supply-shifts within the market. Whitburn (2012) emphasizes the continued increase of secondary platinum supply through recycling and reuse. As global demand rises faster than supply can handle, this secondary supply-shift increase circumvents some of the price increases by maintaining a steady stream of commodity supply for the global market. While Figure 14 shows a clear increase in the importance of recycled platinum products as a percentage of total demand, it must be noted that this is a perceptual increase based on a relatively small output of secondary supply as base-unit. Yet it is very interesting to note that the recycling industry has been the lead growing group of companies in the increase of platinum supply worldwide (Ibid.). Catalyst converter-recycling has been responsible for the major growth, as techniques for recovery have improved and price effectiveness of recycling has improved as well. While currently 23% of all platinum supply is recycled, this is expected to continue to grow far into the future, since the supply-market resides in a “*low growth environment*” (Whitburn, 2012, p.13). Being able to meet the needs of future platinum applications as technological advancements (especially within the transportation-sector, the major demand-driver of the platinum market) are made, is among the major drivers of growth of this secondary supply-stream (Mudd, 2012a; Gordon et al., 2012; Yang, 2009).

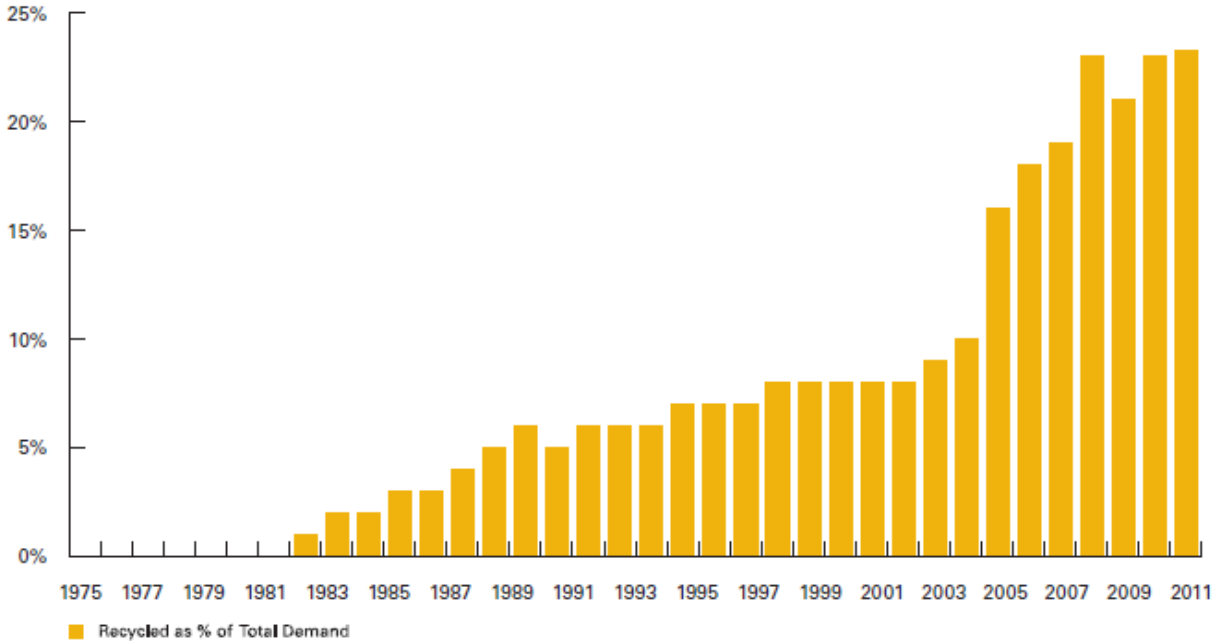


Figure 14. Recycling rate as percentage of total global platinum demand (Whitburn, 2012, p.12)

Generally, the platinum-mining MNC’s are involved in a range of mineral commodities next to the extraction of platinum (Ibid.). A considerable part of the global market supply share is extracted by companies which do not have platinum as their primary resource. For example, while Anglo Platinum is seriously involved in platinum mining activities, there is also activity in mining nickel, iron, diamonds and other related metal ores (Anglo American, 2012). Their mothering company, Anglo American, even falls under the diamond-giant De Beers: these structures show that large platinum MNC’s are also intertwined within other precious minerals commodity markets. However, several other influential PGM-mining corporations have maintained their platinum-based focus. The most

important MNC's in terms of production volume are shown in Table 4. This focus on platinum production can be beneficial in the sense that it can reduce operation costs and maintain a production process that is sustainable in the long run (Mudd, 2010). Anglo Platinum's strategy for the PGM-market is already aimed at reducing long term risk through increasing overhead production, thereby allowing for the meeting of long-term demand expectations (Anglo American, 2012). However, the expected demand increase as a result of the environmental regulation stringency as also acknowledged by this MNC to increase flexibility of operations in the long run.

Company	Annual platinum production volumes 2013 (approx.)	Global market share (approx.)	Source
<i>Anglo Platinum</i>	2.2-2.4 million oz	30%	Bloxham et al., 2013
<i>Impala Platinum Holdings</i>	1.582.000 oz	20%	Implats, 2013
<i>LonMin</i>	751.000 oz	7,5%	Lonmin, 2013
<i>Aquarius Platinum Ltd.</i>	225.000-250.000 oz (400.000 oz incl. shares)	3% (5% inc. shares)	APL, 2013

Table 4. Large PGM-mining companies and their production volumes and market share

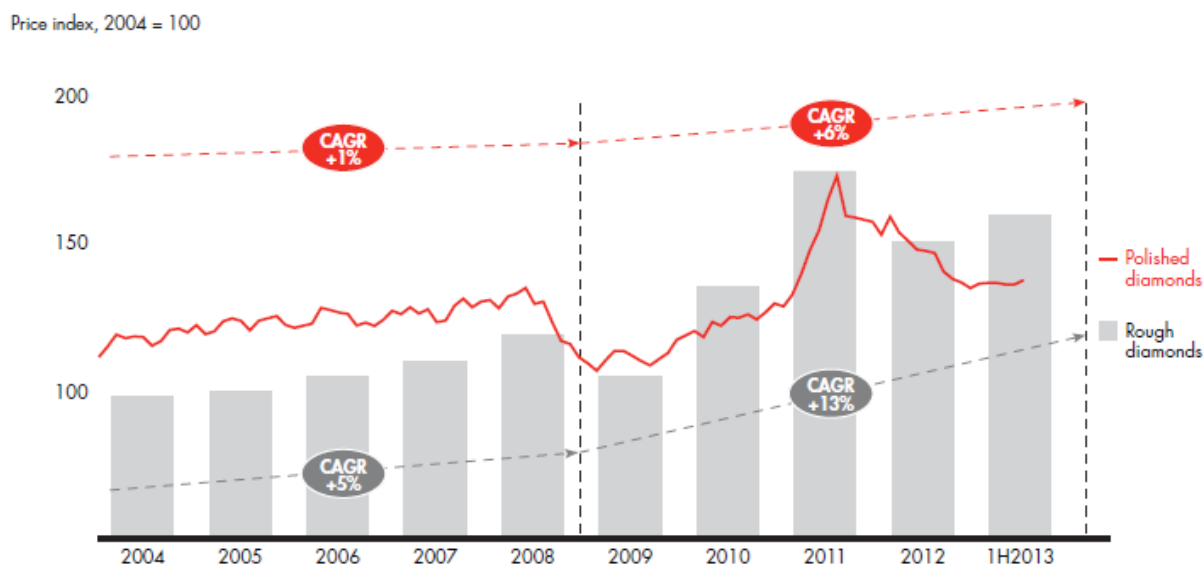
For other large MNC's, mainly operational in the South African-market, the long-term market strategies are built around a balanced supply and demand and sustainable production processes. The CSR-activities of companies such as LonMin, Impala Platinum Holdings, and Aquarius Platinum have all been gaining importance in the daily business practices (Lonmin, 2013; APL, 2013; Implats, 2013). LonMin and Aquarius seem to focus on risk, safety and socially-related projects and SD-strategies (Lonmin, 2013; APL, 2013). Despite setting up local monitoring programs, LonMin still has a lot of nuisance complaints from surrounding areas, strengthened by accompanying health issues (Ololade & Annegarn, 2013). Anglo Platinum and Impala Platinum Holdings, on the other hand, have truly incorporated environmental, social and economic CSR-related themes within their everyday business practices in their operational performance strategy (Anglo American, 2012; Implats, 2013). This is presumably because of the low proximity of their primary mines with the town of Rustenburg, which inevitably leads to a lot of interaction with the local society (Ololade & Annegarn, 2013). All of the large international platinum producing companies in South Africa now produce a yearly report devoted to their environmental and social performance. Mudd (2012b) found that the platinum-sector in particular is one of the frontrunners in sustainability performance reporting. He states that *“the breath and extent of sustainability reporting by the PGMs mining sector is improving over time [...], as well as the ability to link such reporting to operational performance and targets”* (Mudd, 2012b, p.18). This accentuates the fact that the sustainable performance and effectiveness of mining corporations are interconnected elements, inherent to any mining operation in a modern society. Ololade & Annegarn (2013) do however emphasize that despite the much improved CSR-efforts of the last decade, there is *“still a lot of ground to cover to convince the communities of the benefits the mines claim to provide to improve the quality of life of the residents”* (p.574). Their study covers all of the platinum companies stated in Table 4, with the exception of Aquarius Platinum, yet the this general trend seems to be true throughout the sector. Within their annual sustainability reports, all MNC's state that major CSR-efforts on both the social and environmental sides are improving over time, and monitoring systems are implemented in order to provide adequate data and public transparency (Bloxham et al., 2013; Lonmin, 2013; APL, 2013; Implats, 2013). The negative externalities resulting from the extractive activities would require a much greater effort to solve major issues like environmental degradation, as well as health problems which have resulted from the deterioration of air quality as a consequence of mining activities (Ibid.). Sustainable development does

however seem to become an increasingly important part of the daily business practices of the major platinum companies: competitiveness over production is now also aimed at surpassing each other in the 'greenest' platinum produce. Meeting long-term demand also addresses risk management procedures and overhead and stock management by the mining companies. Ensuring long-term mining possibilities in the respective mining locations is essential for the operational continuation far into the future, which is an issue widely acknowledged within the precious minerals markets, yet even more so for the platinum market. Whereas the PGM-mining sector seems to be a frontrunner in this respect, other mineral commodity sectors are likely to follow a similar path of sustainability performance and operational competitiveness interconnections.

4.3.3. *Diamonds*

The global diamonds market is shaped by cartel-formation of key producing and exporting mining corporations (Spar, 2006). This industry somewhat deviates from other markets because of the properties and uses of the extracted products themselves. In a normal economic context, the market is likely to favor the cheaper product, yet the value and appreciation of diamonds largely comes from its expensiveness (AWDC, 2011). The theory of change indicates that next to regulatory failure, market failure is the second major lever for change (Pacific Institute, 2014). The businesses most responsible for the environmental and social impacts of economic activities are those that, in the case of the diamond industry, extracts and trades minerals on the largest scale. Therefore, the theory suggests that the largest and most active corporations would need to be analyzed in order to attain a realistic image of the major impacting characteristics of this market. This section will therefore focus on the four major cartels and corporations within the global diamond extraction and trade-industry, which together make up almost half of the market for diamonds globally. The most prominent conglomeration of companies within the diamond mining industry is De Beers Group. As one of the most effective controllers of the diamond market through its cartel structure, the company has historically been able to exert massive amounts of influence (Kretschmer, 1998). Diamonds have always been expensive, yet increased production in the early 20th century caused the largest cartel in the business, De Beers, to gobble up all small producing firms and incorporate them into their consortium. For De Beers, this was the only way to secure scarcity in the international market, since free production would only cause increase in supply and therefore severe price reductions (Ibid.).

The extraction of diamonds is a very concentrated market, mostly focusing on diamond reserves in a few locations: several sub-Saharan African countries, as well as Russia, Canada and Australia are among the main producing nations (Spar, 2006). The most high-valued diamond gems are extracted from Russian mines, causing the leading Russian cartel, ALROSA, to be the only serious competitor of the market-dominating and institutionalized cartel created by De Beers. The high quality of the Russian product caused them to have some influence on the De Beers monopoly, granting them to attain a serious foothold within the international market (Kretschmer, 1998). Other relevant, yet less price-influential large players on the global diamond market include the British-Australian Rio Tinto Group and the Canada-based Dominion Diamond Corporation. These will be included within the market analysis, as they are among the largest and therefore most significant corporations in the global diamond market.



Note: The CAGR for polished-diamond prices is calculated as the growth rate for year-end prices; rough-diamond prices for the first half of 2013 have been estimated based upon ALROSA and De Beers results
 Source: General polished-diamonds price index (PolishedPrices.com); Kimberley Process; company data; Bain analysis

Figure 15. Diamond price development on the global marketplace (AWDC, 2013, p.4)

The price shifts within the diamond market have seen some disruptions in recent years. The continued annual growth rate (CAGR) of the global diamond price has been influenced by the economic crisis (AWDC, 2013). As can be seen in Figure 15, the market has already recovered from the downfall and is steadily continuing its growth pattern. Especially rough diamonds, processed earlier on in the global value chain as compared to polished ones, have seen some clear price increases in the last few years. The price recovery has also had some influence on the supply rate of the commodity on a global scale. The largest MNC's involved in diamond extraction and production are expected to see a market-wide increase of an average annual rate of 2,8% (AWDC, 2011). All projected scenarios by the World Diamond Council (WDC) expect some degree of annual average growth of global supply, ranging between 0-5% (Ibid.). Focusing on the large MNC's and the shifts in market volumes, Rio Tinto is expected to gain some additional market share, ensuring their respectable third-largest producer position behind the dominating De Beers and ALROSA groups (Table 5 and Figure 16).

Company	Annual diamond production volumes 2012 (approx.)	Global market share (approx.)	Source
ALROSA	34 million carats	27%	ALROSA, 2012
De Beers	28 million carats	22%	De Beers, 2013
Rio Tinto	13 million carats	11%	Rio Tinto, 2013
Dominion Diamond Company	760.000 carats	0,6%	DDC, 2013

Table 5. Large diamond mining companies and their production volumes and market share

Gradually, De Beers is expected to lose even more of its formerly world-dominating position to the Russia-based ALROSA. The Russian company is expected to gain an even greater foothold in the longer term, further decreasing the almost monopolistic position of the De Beers Group. The implications of this power shift might however be significant, as De Beers has always been used to dominating and influencing the diamond market single-handedly for decades (Kretschmer, 1998). However, as can be seen in Figure 16, the relative market share of De Beers has crunched down during global economic recession. Fierce competition from ALROSA, whom have a product quality and volume advantage over their competition (Semenovykh, 2011), has been one of the major threats to

the monopoly position De Beers always used to have, i.e. serious measures should be taken by De Beers to keep a strong market position. Diversification with competing companies might be necessary in the relatively short run in order to attain this (Gupta et al., 2010). Moving towards CSR-based production practices might be one of the options to ensure production safeguards within the market in the long run (Bone, 2012).

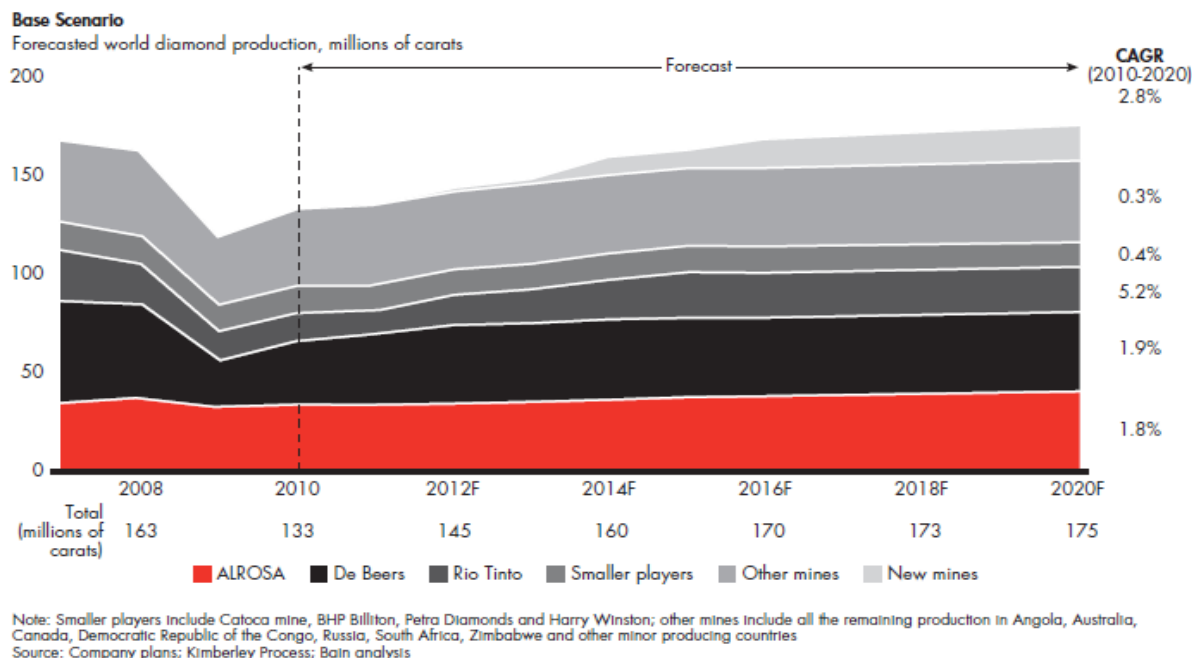
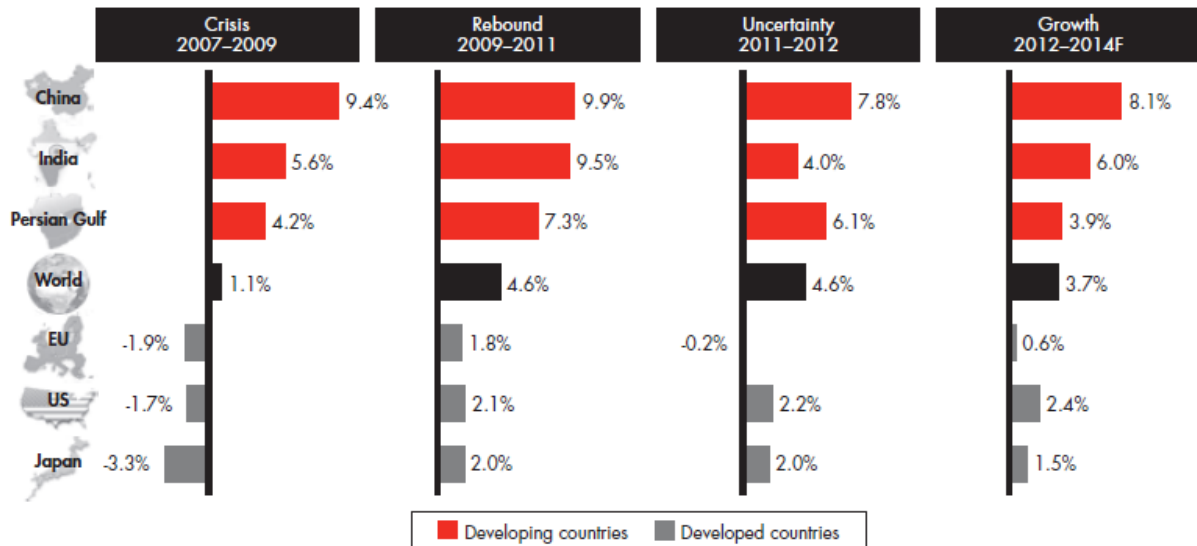


Figure 16. Forecast of supply growth largest companies (AWDC, 2011, p.65)

Recently, the problem of ‘blood diamonds’, i.e. motivating and funding wars in countries rich in diamond resources (Le Billon, 2008), has influenced the market in a negative way. The WDC has addressed this issue as one of the potential threats to the image of the diamond as a product, as well as its possible impacts on the value and therefore pricing trend of the commodity (Bone, 2012). The problem has been a major driver in making the diamond chain more sustainable, through incorporation of CSR-principles in everyday business practice. Through active involvement in producing countries’ societies by means of initiatives like the Kimberley Process Certification Scheme (KPCS), negative externalities of the production of diamonds can be circumvented (Global Witness, 2005). Protecting the market from illegal diamond trade and activities in war zones is essential to maintain constant product value, since suspicion of illegal trade significantly damages long-term trade relations, a core characteristic of the global diamond trade (Grant & Taylor, 2004).

The demand for diamonds is gradually shifting from the ‘western’ nations towards the Asian upcoming economies (Figure 17). With China and India as a major potential market, the focus of the diamond export is now moving more and more towards those regions with higher economic potential. At the same time, economies which have traditionally belonged to the core of the market, such as the European Union, the United States and Japan, have been able to recover from the economic crisis and stabilize and even grow their level of demand.



Note: Persian Gulf includes Saudi Arabia, United Arab Emirates, Qatar and Kuwait
 Source: International Monetary Fund (World Economic Outlook Database, April 2013); Bain analysis

Figure 17. Reduced demand growth in developing nations and stabilizing first world demand of diamonds commodity market (AWDC, 2013, p.5)

The role of inventory in the viability of the diamonds market is crucial (Harris & Cai, 2002). Due to the monopolistic characteristics of the market, with all large corporations operating in cartels, the main way of exerting any market power is through maintaining a propositional inventory within the cartel. The very emergence of the cartels has been the result of sheer necessity of survival: selling the diamonds far above the marginal costs of mining has created a situation in which increase of supply would only cause more harm than good for the survival of the very market itself (Bergensstock et al., 2006). Harris & Cai (2002) argue that the actions reflected within inventory management are actions of “market driving [...] clearly linked to market power, position and organization” (p.192). The sheer power of the cartel-structure allows for influence far greater than any ordinary market. Bergensstock et al. (2006) describe the aggressive strategy employed by the biggest cartel, De Beers, as a result of this structure. On numerous occasions, De Beers drove down prices and took short-term losses in order to punish competitors for endangering their market position. By flooding the market with inventory diamonds, competitive companies were forced to either retreat their competitive actions or become part of the cartel’s influence area (Kretschmer, 1998; Bergensstock et al., 2006).

4.4. Precious minerals markets: overseeing trends and dynamics

The analysis of the markets for gold, platinum and diamonds has shown several essential trends in the precious minerals prices over time. Three key issues stand out in the context of market development and sustainability: the expected global price increase as demand grows and primary production decreases, the issue of peak minerals and its effects on the global precious minerals markets, as well as the increasing efforts by large extractive companies to improve their CSR-performance and thereby making CSR-management and producing practices significantly more important within the industry. The expected global price increase of precious mineral resources is connected to the peak minerals-problem in that the latter strengthens the former: with decreased primary production possibilities the price will inevitably be influenced. The models expanded upon in this chapter have shown how greatly complex the influences on the pricing dynamics itself are, with many factors influencing pricing trends over time. Explaining the historical price dynamics and foreseeing possible future trends in global commodity prices is inherently linked to the supply- and demand-dynamics of the respective commodities covered in this analysis. All three commodities covered, gold, platinum and diamonds,

have their own unique market structures that are generally based around their resource availability (both in terms of scarcity and geological diffusion) and product application characteristics. Any local industry in precious minerals would need to be aware of these commodity-specific characteristics and adjust their competitive strategy accordingly in order to remain competitive on the global trade-field. Within the gold market, the investment climate will be highly influential on the inventory dynamics and primary production-levels. Since the market is highly dispersed and yet highly important within the global financial system, both core and peripheral production nodes will be relevant in terms of production due to this dispersion. The uncertain price trends of the recent years have caused much investment possibilities since gold is seen as a safe haven commodity, which will make continued production of this precious mineral a highly lucrative business. For platinum, the future production is highly dependent on governmental environmental regulations on a global level. The favorable catalytic converter-application possibility of this commodity allows for a bright future in terms of demand (as environmental regulations in the mobility sector get stricter), while simultaneously being very vulnerable in supply. This is mainly caused by the fact that production of platinum is focused in a single country, South Africa, making primary production highly dependent on national South African mining policies and possibilities. Another cause is the decreased long-term importance of primary platinum production, in favor of secondary supply of recycled platinum. For the diamond market, much uncertainty has arisen due to the upcoming Russian company ALROSA, which is now a lead producer in the highly concentrated diamond extraction market. Very few MNC's have influence over global diamond production, making production and price shifts to be sudden. With the previously dominating De Beers Group now no longer being able to individually influence price trends, future events are hard to predict. Since diamond prices have historically been artificially kept high, together with the increased primary production, the market shifts now seen could have serious implications in the longer term, possibly endangering the continued existence of the diamond market itself.

Price volatility seems to be a key trend within every precious mineral industry analyzed. While historically price trends have been relatively constant over time, recent years have seen high volatility throughout the respective markets. The forecast analyses show that this trend is set to continue well into the future. Main reasons include the decreased possibility in the longer term to continue primary production of high-grade ores, or the more difficult extraction possibilities of these ores. The high price volatility also caused the large MNC's to seek competitiveness in other themes than extraction and export sales alone: CSR-management has become a central business management practice in all of the companies analyzed. While this trend seems logical in the light of the growing importance of CSR-business practices in most globalized markets, the incorporation of a high-quality CSR-business practice in the precious minerals extraction industry has been introduced remarkably rapid. Whereas only a few years ago almost no voluntary sustainable mining initiatives existed or were introduced, the last decade has seen an explosive growth in the (albeit forced by external pressure from NGO's, civil society and consumers) voluntary introduction of CSR-business practices. The potential positive impact of such market-wide business transformation for producing countries' exports, especially the peripheral resource-dependent nations such as Namibia, can be of great importance for the long-term future of these production sites. With the whole of the extractive industry striving for a sustainable business practice, much unwanted external effects in terms of negative social and environmental impacts can and will be negated, or at least averted for the benefit of the local communities. Active producing nations are likely to see immediate benefits when voluntary business practices are in place, as the extractive activities are often highly damaging and are likely to cause harm to local residents in some way. Curbing the negative image of the industry is an additional benefit that will increase business possibilities and expand market demand possibilities greatly for the foreseeable future.

- PHASE 2 -

SUSTAINABILITY STANDARDS

-

**Good governance assessment of voluntary initiatives in the
global precious minerals mining sector**

5. Standardization in sustainable global precious minerals production

As the market analysis in the previous phase of the research has proven, the increased importance of CSR-based business practices is present in all major precious minerals commodity sectors. A great portion of the CSR-based practices are managed through the application of market-induced voluntary sustainability standards, which are quickly becoming the dominant type of CSR-business practice in the global precious minerals industry. This chapter will cover the main analysis and comparison of sustainability standards and certification schemes for the global gold, platinum and diamonds commodity chains. After a broad analysis of all available standards within the mining sector, an assessment of applicability of the standardization initiatives will decrease the scope of the standardization initiatives analyzed because of their nature of application, coverage, or other scope-related factors. The standards ‘surviving’ the first few broad analyses will then be assessed on good governance-principles, thereby aiming to attain an overview of their qualities for the respective precious mineral commodity chain systems.

5.1. Precious minerals and market-based governance shifts

The increase of voluntary market-based sustainability initiatives, in particular the self-governance arrangements between global and local stakeholders concerning sustainability standards and certification shifts, has become increasingly important, both in a commodity market and in a sustainability (self-)governance context (Barry et al., 2012). The creation of standards and certification systems is presumed to have multiple beneficial effects. Next to the improvement to environmental and social business practices and/or consequences, the ‘toolkit’ of standards and schemes is also likely to be a leverage for market demand (Blackmore et al., 2013). It can aid producing companies to access other, more desired markets, capture product returns, as well as providing a learning opportunity (Blackmore & Keeley, 2012).

Despite the fact that the mining-sector is lagging behind in this self-governance shift trend, there have been numerous attempts by stakeholders and large MNC’s in creating globally applied standards for greening their resource extraction supply chain-systems (Dashwood, 2013). For precious minerals in particular, the creation of standards has been upcoming in recent decades, with examples such as the Extractive Industries Transparency Initiative (EITI) and Fairmined as recent successful globally applied environmental standardization systems (Aronson, 2011; Hilson, 2014). Brereton (2002) emphasizes the “*increase of the number and scope of third-party codes, standards and certification schemes*” (p.16) as a response to “*a major effort by leading companies in the mining industry to engage in a dialogue*” (p.15). This has caused many contractors (using a contractor-structure is a common practice for the extractive industry) to oblige partners to maintain a certain level of corporate sustainability performance. There are numerous standards, principles and certification schemes within the sector that have been developed and used over the years for environmental and social improvement within the precious mineral extraction process. Table 6 provides the most essential of these initiatives and their origin of use, sorted from oldest to newest sustainability initiative. Additionally, the initiating actors and types of actors involved in this initiation are stated within the overview.

Standard	Year of origin	Country of origin	Initiated by	Actor type ¹
<i>OECD Guidelines for Multinational Enterprises</i>	1976	France	OECD	IGO
<i>CERES Principles</i>	1989	USA	Ceres Coalition	MIA
<i>ISO 14000</i>	1996	Switzerland	ISO Standardization	NGO
<i>Social Accountability International (SA8000)</i>	1997	USA	SAI advisory board	MIA
<i>FLA Workplace Code of Conduct</i>	1997	USA	Fair Labor Association	MIA
<i>ILO Labor Standards</i>	1998	Switzerland	ILO United Nations	IGO
<i>Ethical Trading Initiative (ETI)</i>	1998	UK	Ethical Trading Initiative	MIA
<i>Global Reporting Initiative (GRI)</i>	2000	USA	CERES/Tellus Institute/UNEP	NGO
<i>UN Global Compact</i>	2000	Switzerland	United Nations	IGO
<i>SGE 21</i>	2000	Spain	Forética	NGO
<i>Communities and Small-Scale Mining (CASM)</i>	2001	USA	World Bank	NGO
<i>Sedex Members Ethical Trade Audit (SMETA)</i>	2001	UK	UK retail companies	NGO
<i>Kimberley Process Certification Scheme (KPCS)</i>	2002	South Africa	Diamond companies & civil society	MIA
<i>ICMM Sustainable Development Charter</i>	2002	Canada	International Council on Mining and Metals	COM
<i>International Cyanide Management Code</i>	2002	USA	Committee under UNEP	MIA
<i>Extractive Industries Transparency Initiative (EITI)</i>	2003	UK	Conference members	MIA
<i>Electronics Industry Citizenship Coalition (EICC)</i>	2004	USA	Electronics sector	COM
<i>Responsible Jewellery Council (RJC)</i>	2005	UK	RJC International	NGO
<i>Towards Sustainable Mining (TSM) Initiative</i>	2005	Canada	Mining Association of Canada	COM
<i>XertifiX</i>	2005	Germany	XertifiX	NGO
<i>Fair for Life</i>	2006	Switzerland	Bio-Foundation	NGO
<i>Mining Certification Evaluation Project (MCEP)</i>	2006	Australia	Multi-sector collaboration	MIA
<i>Fair Stone</i>	2007	Germany	WiN = WiN GmbH & ISSA	NGO
<i>Business Social Compliance Initiative (BSCI) Codes of Conduct</i>	2009	Belgium	Foreign Trade Association (FTA)	COM
<i>Australian Minerals Code for Environmental Management</i>	2009	Australia	Minerals Council of Australia	MIA
<i>Fairmined (ARM Fairtrade)</i>	2010	Colombia	Alliance for Responsible Mining and Fairtrade International	NGO
<i>WFTO Guarantee System</i>	2011	Kenia	World Fair Trade Organization	COM
<i>Rapaport's Fair Trade in Diamonds and Jewellery Scheme</i>	2011	USA	Rapaport Group	COM
<i>Workplace Conditions Assessment (WCA)</i>	2012	UK	Intertek	COM
<i>Initiative for Responsible Mining Assurance (IRMA)</i>	2014	Canada	Coalition of NGO's, businesses & trade unions	MIA

Table 6. Mining sector sustainability initiatives and their origin

Clearly, the majority of initiatives has only been developed recently. While earlier initiatives mainly spawn from international organization-induced efforts (United Nations, OECD, World Bank), a clear trend after the turn of the millennium are the sustainability initiatives and assessment tools from conglomerations of companies, civil society and NGO's. The vast majority of standards available for

¹ Actor types described have the following coding: COM = Company, NGO = Non-governmental Organization, IGO = International Governance Organization, MIA = Multiple Initiating Actors

the mining industry is induced by a multitude of stakeholders, ranging from collaborating MNC's to individual NGO-induced assessment systems. Another interesting trend seems to be the development of standards in major consuming countries, i.e. the standards are developed from a 'first-world' perspective, generally since the companies involved also are based within the consumer-nations, while doing their extractive activities in the 'third-world' developing nations. The multitude of stakeholders involved within the development and initiation of voluntary market standards is shown by the types of organizations involved during this process of initiation. Whereas companies apply the standards, NGO's generally seem to be a major catalyst of such voluntary initiatives. Regular occurrence of NGO-business collaborations for the creation of voluntary sustainability standards is confirmed in research by, among others, Perez-Aleman & Sandilands (2008) and Vermeulen & Seuring (2009).

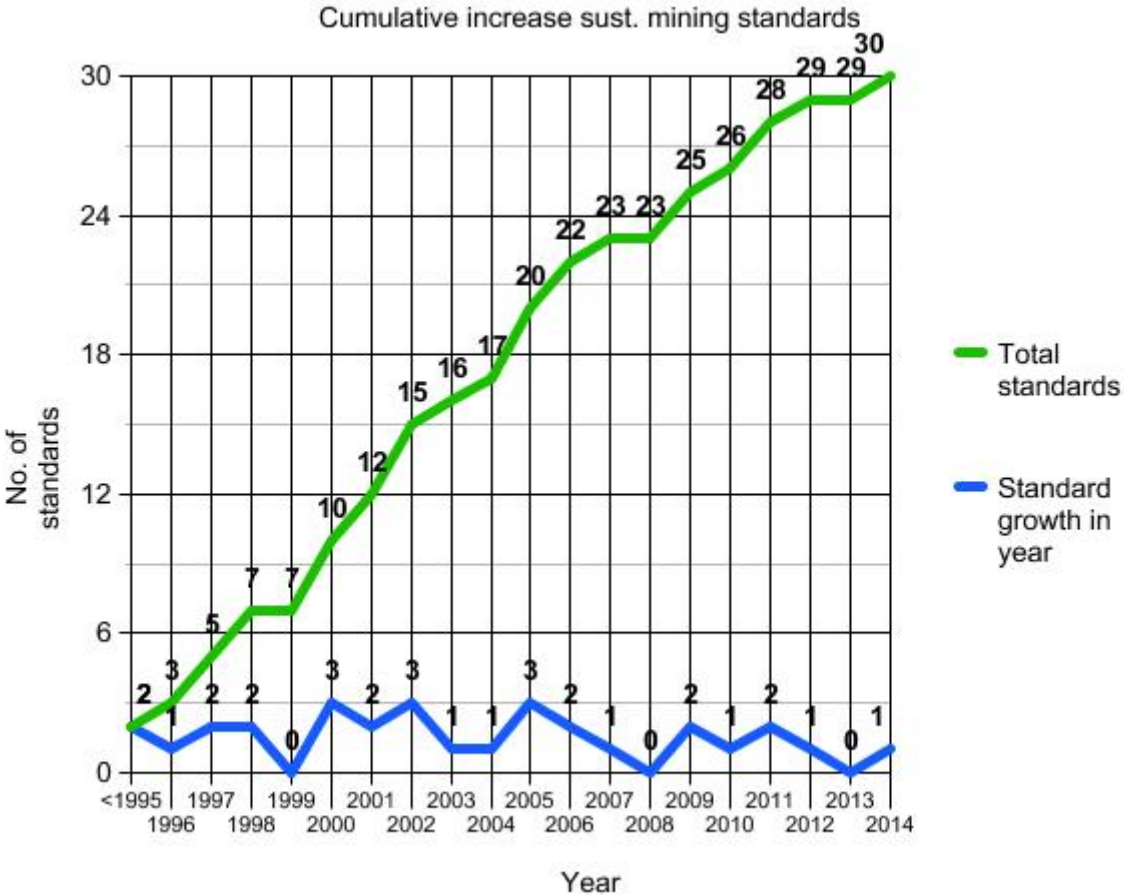


Figure 18. Mining sector sustainability initiatives cumulative increase

As can be seen in Figure 18, there has been a rapid increase in the amount of mining-related sustainability initiatives over time. Especially during the turning of the century, the mining standards really started to be firmly rooted within the business practices of the extractive industry. The shift towards self-governance has seen increasing importance, yet Buxton (2012) warns us that the increase in sustainability initiatives does not necessarily imply the widespread implication of these standards in business practice throughout the *whole* sector. And even when participation is ensured, despite the best intentions of the involved companies, the quality of implementation might vary between companies, as well as over time and location (Ibid.). Especially since national or local impacts of mining activities can be significant (Eggert, 2001), the application of the initiatives must occur carefully and ensure that both businesses and local communities benefit from the shift towards more sustainable business practices. The growth of scope of mining standards over time, in particular for the precious mineral application, has greatly increased the application possibilities of the initiatives as more of them have

been initiated over time (Greene, 2002). However, the increase of the number of voluntary initiatives within the market can have negative effects as well, as some critics have warned that the over-abundance of initiatives might actually have detrimental effects overall (Ibid.). NGO's and other external actors worry about the fact that an overflow of initiatives might decrease the possibility to improve their quality: tracking and influencing in order to ensure correct implementation is an increasingly difficult task with a potential 'wild growth' of market-based initiatives. Therefore it would make sense to actually decrease the number of voluntary initiatives over time and keep a few strong, independent and well-managed and monitored initiatives for the industry sector. Similar issues have been seen for the sustainability reporting quality in the mining sector, which has been highly problematic in some cases (Fonseca, 2010). In order to prevent such quality flaws for the market-based sustainability initiatives, a strong focus on several qualitatively good initiatives might improve overall effects of such efforts in the long run (Greene, 2002). Nevertheless, in order for the self-governance system to crystallize into a situation wherein few qualitatively good standards survive, the current phase of standards increase should come to an end first. The graph in Figure 18 shows that the biggest 'boom' in new initiatives has passed, thus potentially allowing for the phase in which 'natural selection' of the initiatives commences while most of them have now matured. The choice for the most qualitatively sound initiatives can now be made by businesses, something with which a clear systematic overview of their quality might certainly be help them. This phase of the researched aims to create such an overview, or at least a first step to divide the methodologically 'good' from the methodologically 'bad' sustainability standards.

Whereas the early standards tend to focus more on social aspects such as labor standards (ILO, 2008; FLA, 2011), later voluntary initiatives are more adapted to the mining and minerals industry sector and address a wider range of issues (Walker & Howard, 2002). In any case, the increasing importance of voluntary market sustainability standards in the precious minerals markets seems to have brought some increased importance to collaborations between stakeholders first and foremost on fair labor and workplace conditions (general trend in the early standards) and more recently the full involvement of the three aspects of sustainability, i.e. next to social aspects also incorporation of environmental and economic issues and balancing between these aspects. This trend is most likely the result of increased concern of extractive industries pervasive problems, ranging from corruption to blood diamonds, regional health concerns and natural degradation (Bridge, 2008). While mostly the problems are attributed to failed states in producing 'third-world' regions (either structural or contextual), the national-scale focus dismisses the MNC-influence in these countries as well as their role in the extractive commodities' production systems (Ibid.). The recent emergence of sustainability standards can likely be attributed to the state failure-analogy, which consistently returns as an issue in an extractive industry-context (Haufler, 2010; Pegg, 2006; Le Billon, 2001). Bridge (2008) confirms that the *"emerging policy consensus is that a state's institutional capacities and effectiveness exert a critical influence over whether extractive economies work in the interests of development"* (p. 393). When such state systems fail, the market must fill the void, especially when increased pressure is exerted from multiple stakeholders, which could potentially impact the extractive industries' operations and revenues on a long-term basis.

5.2. Mining standards and self-governance: the role of stakeholders

Despite the fact that failed state regulation or regulatory enforcement is an important driver of sustainability standards within the global precious mineral industry, they are not the sole reason for the increased importance of the emergence of the market-based self-governance systems. As stated in the previous subsection, the role of external stakeholders on the creation of improved social and environmental voluntary regulation systems is crucial. Moreover, they also involve and have

considerable impact on internal stakeholders, being the relationship between businesses and their employees. The mining industry in particular deals with a wide variety of stakeholder groups, each of which have their relevance within different stages of the extractive operations. Getting inclined with these external stakeholders through collectively setting standardized regulations concerning mining activity, aids the likelihood of long-term cooperation and possibilities of increased operations in the future (Hilson & Murck, 2000). While this alone is an economic incentive for the extractive industry to get involved in a cooperative network with local, regional and global stakeholders, addressing stakeholder needs also created possibilities to contribute to improved societal interactions which might actually benefit the local communities (e.g. through employment of local people). Smith & Fischlein (2010) posit the argument that these stakeholder networks might actually introduce clusters of cooperating actors within and between particular industries. This type of ‘cooperative competition’ created by newly formed CSR-based voluntary initiatives is thus suggested to be able to restructure the market competitiveness within the sector. With private actors gaining rule-making authority, the corporate interactions will certainly shift. However, legitimacy of maintaining certain sustainability governance authority is therefore embedded within the network as a whole. This implies that cooperatively creating sustainability standards means a cooperative responsibility for its credibility and legitimacy over time, i.e. a legitimate CSR-operation based on sustainability standards will move beyond the business organization alone, since it operates within a more complex network of interrelated actors and stakeholders. This embedded network-concept is an important issue to remember when assessing the voluntary standard legitimacy within the analysis of section 7.3.

As with any CSR-related business activity, constant and widespread communication and dialogue with stakeholders improves the likelihood of a better corporate image, which consequently improves business as a whole (Hamann, 2003). Mutti et al. (2012) found that communication problems are among the main obstacles of effective stakeholder engagement. Dealing with criticism from e.g. NGO’s has resulted in some industry standards resulting from NGO-business partnerships (Pattberg, 2004): clear examples of such initiatives include the creation of the International Cyanide Management Code (Nelson, 2007), Extractive Industries Transparency Initiative (Ibid.) and the Kimberley Process Certification Scheme (Bieri, 2010). The ethical campaigning resulting from such initiatives have created a better sustainability image within the mining and minerals sector, yet must be seen in a context of responsibility and correct communication as well. The initiation of any standard occurs in small steps, and applying voluntary regulation means committing the business activities within certain sustainability boundaries. However, it is essential that correct and truthful communication of the performance within the standards set is met. Being able to supply ethically produced goods means bearing the responsibility of actually making the commodity chain green: the products must in all cases be indeed green and the full stakeholder network must adhere to these regulations in order to maintain this sustainability claim throughout the supply chain (Hughes et al., 2008). Already, serious doubts have been casted over the credibility of CSR-based claims made within the extractive industry in the recent past (Fonseca, 2010). External assurance of mining companies’ CSR-based claims is therefore important in the context of checking corporate sustainability claims and assuring their credibility. The current situation, as suggested by Fonseca (2010), is that much of the standards’ third-party assurance systems employed within the sector are under control of or at least influenced by the mining companies themselves. This problematic suggestion must therefore be also be taken into account within the authenticity-analysis of the standards in section 7.4.

6. Sustainability standards and certification schemes in precious mineral mining

The applied standards and certification schemes for the precious minerals markets will be characterized and elaborated upon in this section. This will eventually lead to a selection of suitable standards that fall within the scope of this research, and therefore can be analyzed further. However, before embarking upon the analysis of the standards and their quality, we will first assess them on their characteristics and applicability in this subsection.

6.1. State of the market: sustainability standards in precious minerals

While any mining activity will inevitably result in some social and environmental damage, the industry is now actively involved in minimizing the damage of their extractive activities as much as possible. Civil society groups have been a major stimulator in this voluntary initiatives adoption trend in the past two decades (Miranda et al., 2005). The development of voluntary sustainability initiatives in the market for precious minerals is becoming increasingly important as a tool for greening their commodity chains. While previous studies attempted to provide clear overviews of the available standards and certification schemes within the sector (Greene et al., 2002; Walker & Howard, 2002), both the application to specific mineral commodities and the most recent development within the sector were not included within these studies. Therefore, an up-to-date overview of the most relevant voluntary market initiatives is provided in Table 7 below. By no means it is claimed that this overview is exhaustive, i.e. it claims not that all existing sustainability initiatives applicable to the precious minerals mining industry are included within the overview. Furthermore, as time continues, it is very likely that new initiatives will emerge, since the industry on a global level is currently seeing a great increase in voluntary business sustainability initiatives (Barry et al., 2012). After providing the overview of the currently available standards, the selection process will be explained and the selected standards will thereafter be assessed on several categories of good governance-criteria.

Since differences among the standards and certification schemes exist, assessing them would require us to differentiate them according to specific types of voluntary initiatives. Often, the initiatives are not designed especially for the precious mineral commodity markets, yet are applied as such within these markets. Other voluntary standards and certification schemes are focusing especially on the extraction of minerals or metals, or a specific sub-system within the mining-sector. In order to clarify the category in which these initiatives belong, as well as to improve the ability of wider application of the analytical methodology applied here, three different types of voluntary initiatives are distinguished for the purpose of this research, as based on Greene et al. (2002):

1. **Broad Guiding Principles (BGP)** – Often broad in their approach and application, these guiding principles are applied by companies as sustainable ‘values’ in order to create a sustainable business management framework. Broad principles usually are applied in order to move towards a certain business direction, a first step into a more sustainable business policy. Common application creates a wide application of standardized sustainability statements across businesses and industries;
2. **Process-Based Management Systems or Process-Based Management Systems with Performance Elements (ProS)** – These initiatives focus on the standardized application management of risks and safety performance, i.e. the process of production and the maintenance of sound business practices. Active corporate management of environmental or social issues in production systems is a central function of process standards’ application. ProS-based initiatives leave room for improvement over time and are therefore mostly

formulated according to certain corporate management rules and business practices, e.g. the management of social or environmental risks. For some initiatives, it is questionable whether a categorical grouping falls within a process-based or performance-based system. This research formulates these initiatives as being process-based management systems with performance elements, yet they are not distinguished within the categorical overview in Table 7, i.e. they are principally treated as being process-based;

3. ***Performance-Based Systems (PS)*** – The most common application of voluntary standards are focusing on performance of sustainability-themed issues. These standards formulate a minimum system requirement level that the company sets out to commit to. Performance standards could be seen as voluntary standardized regulation which the company aims to comply with. *PS*-based initiatives can take different shapes, either based on quantitative (i.e. specific numerical targets) and/or qualitative (i.e. codes of conduct/best practices, prevention of certain actions) corporate governance.

Another differentiation can be made for the focus of the standards themselves according to the relevant elements of the ‘triple bottom line’ (Hacking & Guthrie, 2008), i.e. the incorporation of social, environmental and economic elements into the sustainability standards, which in the context of mining and minerals has also been recommended to include the concept of good governance (IIED & WBCSD, 2002). Furthermore, the distinction between business-to-business (B2B) and business-to-consumer (B2C) type sustainability initiatives is important to make, mainly in order to clarify the target focus of the respective standards and certification schemes. B2C-type standards are aimed at informing consumers about the sustainability performance of the respective standard belonging to a certain product or service, while B2B-type standards involve information of the standard that is aimed at other businesses (Horne, 2009). The target audience of the respective standards might impact the level of trust and credibility, as well as the way in which transparency is organized. After all, the communication of product or service benefits is performed with different tools and focuses when the standard is either a B2C-standard or a B2B-standard (Ibid.). Moreover, the standards must also be analyzed in the context of the research field, i.e. there must be a connection with the precious mineral commodities under analysis: gold, platinum or diamonds. All involved standards displayed in Table 7 have been selected on the basis that they are applied somewhere in the mining sector, or mentioned by large mining MNC’s as being relevant to their business practices. However, it can be argued that not all of them apply specifically to either gold, platinum, or diamonds. Some standards are specifically created for a certain commodity, while others can also be applied in widely different sector than that of the extractive industry. The applicability is thus widely different per specific sustainability initiative, which makes it essential for the selection procedure to involve a distinction between the different precious mineral commodities analyzed in this research.

Standards relevant for extractive industries	Type ²	Target audience	Coverage Triple P			Standard relevant for		
			People	Planet	Profit	Gold	Platinum	Diamonds
ILO Labor Standards	BGP	B2B	X			X	X	X
OECD Guidelines for Multinational Enterprises	BGP	B2B	X	X	X	X	X	X
CERES Principles	BGP	B2C	X	X	X	X	X	X
ISO 14000	ProS	B2B/B2C		X		X	X	X
Social Accountability International (SA8000)	PS	B2B/B2C	X			X	X	X
FLA Workplace Code of Conduct	PS	B2B	X			X	X	X
Ethical Trading Initiative (ETI)	BGP	B2C	X			X	X	X
Global Reporting Initiative (GRI)	BGP	B2C	X	X	X	X	X	X
UN Global Compact	BGP	B2C	X	X	X	X	X	X
SGE 21	ProS	B2C	X	X		X	X	X
Communities and Small-Scale Mining (CASM)	BGP	B2C	X	X	X	X	X	X
Sedex Members Ethical Trade Unit (SMETA)	BGP	B2B	X	X	X	X	X	X
Kimberley Process Certification Scheme (KPCS)	PS	B2C	X	X	X			X
ICMM Sustainable Development Charter	BGP	B2C	X	X	X	X	X	X
International Cyanide Management Code	ProS	B2B/B2C	X	X		X		
Extractive Industries Transparency Initiative (EITI)	PS	B2C	X	X	X	X	X	X
Electronics Industry Citizenship Coalition (EICC)	BGP	B2C	X			X	X	X
Responsible Jewellery Council (RJC)	PS	B2C	X	X	X	X		X
Towards Sustainable Mining (TSM) Initiative	BGP	B2C	X	X	X	X	X	X
XertifiX	BGP	B2B	X			X	X	X
Fair for Life	ProS	B2B	X	X	X			
Mining Certification Evaluation Project (MCEP)	BGP	B2B/B2C	X	X	X	X	X	X
Fair Stone	PS	B2B	X	X		X	X	X
Business Social Compliance Initiative (BSCI) Codes of Conduct	BGP	B2B	X			X	X	X
Australian Minerals Code for Environmental Management	PoS	B2B		X		X	X	X
Fairmined	PS	B2C	X	X	X	X		
WFTO Guarantee System	PS	B2C	X			X	X	X
Rapaport's Fair Trade in Diamonds and Jewellery Scheme	PS	B2C	X					X
Workplace Conditions Assessment (WCA)	ProS	B2B	X	X	X	X	X	X
Initiative for Responsible Mining Assurance (IRMA)	PS	B2B	X	X	X	X	X	X

Table 7. Mining sector sustainability initiatives' relevance for sustainability and mineral commodities

² Sustainability initiative types are coded as follows: BGP = Broad Guiding Principles, PS = Performance Standard, ProS = Process Standard (or Process Standard with Performance Elements)

6.2. Selection of relevant standards for quality assessment

In order for the voluntary initiatives in Table 7 to fall within the scope of the analysis, they should at least cover the three elements of the triple bottom line, being people- (social), planet- (environmental) and profit- (economic) related elements. Due to research constraints, it is only possible to focus on a small set of voluntary initiatives in the precious minerals markets. This section will cover the selection procedure for the analysis, which will be elaborated on in the upcoming chapter. By discussing the good governance-performance of the most relevant standards and certification schemes, a clear image can be drawn about the state of the sustainability standards and their relevance for businesses in the extractive sector, with particular focus on the gold, platinum and diamond markets. Assessing their quality in a good governance-context will eventually result in a clear overview of the most suitable and complete voluntary initiatives currently available within the global precious minerals markets.

The selection of the standards in Table 7 involves a set of preconditions for the initiatives, which are required for a relevant analysis of these initiatives on multiple criteria. The selection is also based on the basis of applicability to the relevant commodities. In brief, to ensure the correct application of the good governance criteria analysis in the upcoming subsections, the following criteria apply:

- The standard or certification scheme under analysis is a performance-based system and therefore falls into the ‘PS’-type standard category, thereby excluding broad guiding principles (BGP) and process-based management systems or process-based management systems with performance elements (ProS);
- The standard or certification scheme under analysis covers at least the three basic features of the ‘triple bottom line’, i.e. there is at least coverage of social, environmental and economic issues, labeled in Table 7 as being ‘people’ (social), ‘planet’ (environmental) and ‘profit’ (economic). All standards and certification schemes not meeting these three basic features in their coverage are excluded from further analysis;
- The standard or certification scheme under analysis covers at least one of the relevant precious mineral commodities (i.e. only one of the commodities needs to be covered, not necessarily all of them) or is applicable only to the mining-sector specifically, i.e. more general standards that can be applied to any commodity sector will be excluded from the analysis. This does not imply that these standards cannot be relevant to the precious mineral commodities under analysis in this research.

The above stated criteria leave us with a more comprehensive set of sustainable mining initiatives for the purpose of the good governance-analysis. The highlighted standards in Table 7 indicate the initiatives that meet all three criteria stated above. The following standards will be covered:

- **Kimberley Process Certification Scheme (KPCS)**: a diamond-focused standard currently represented in a total of 81 countries and thereby accounting for 99,8% of the rough diamond production globally (KPCS, 2014e);
- **Extractive Industries Transparency Initiative (EITI)**: a standard focusing on increasing the transparency among mining companies, currently represented in 25 countries (with another 46 candidates in the process of becoming a member), accounting for a total net worth of revenue of \$1,- trillion USD (EITI, 2014d);
- **Responsible Jewellery Council (RJC)**: a standard mainly contributing to the sustainable production of jewelry on a global level, by ensuring that global supply chains green their business practices. The RJC is currently involved in a partnership with over 500 member companies from a range of different jewelry-related sectors (RJC, 2014j);

- ***Fairmined***: A label created by FairTrade and the Alliance for Responsible Mining (ARM) to ensure the fair labor conditions, environmental situation and reduction of societal impacts of mining activities on the global level;
- ***Initiative for Responsible Mining Assurance (IRMA)***; A relatively new sustainability initiative involved in the environmental and social improvement of mining activities in the broadest sense of the word, mainly focusing on close cooperation with mining companies themselves.

The above standards meeting the criteria will be the research object of the upcoming analysis. They are all B2C-type standards with the exclusion of the IRMA, which is a B2B-standard. Therefore, the analysis of the IRMA will mention differences in B2B-standards if they are applicable (as opposed to the standard's quality performance when a B2C-type applies). The following chapter will zoom in these standards and thereby gain more insight into the overall quality performance of the respective standards. After this analysis, these standards will be viewed in the context of the Namibian precious mineral mining industry.

7. Analysis and comparison of sustainability standards

This section will address the quality of the standards selected in the previous paragraph in terms of good governance-criteria. Assessing the voluntary initiatives on these criteria allows for an analysis of the quality of the currently available standards and certification schemes within the precious minerals mining industry.

7.1. Requirements for effective sustainability standards governance

The development of sustainability standards and certification schemes is a task any consortium of stakeholders would be able to achieve with the right mindset and resources, but the development of *qualitatively good* standards and certification schemes is indeed a high complex and iterative process, involving the need for constant adaptation as the market practices and interactions change dynamically over time. As Hilson & Basu (2003) stress in their analysis, these are inherently interacting with the pillars of ‘good governance’, which is the correct implementation of codes of conduct, standards, and other design guidelines for sustainable business management. Organizations like the ISEAL Alliance have designed codes of practice in order to assess the quality of these good-governance principles (ISEAL, 2011; ISEAL, 2014), thereby allowing for the analysis of the quality of the previously selected voluntary initiatives for the precious minerals industries. Using the ISEAL Codes of Practice, several categories for assessment can be used when looking at the voluntary sustainability initiatives. The categories and accompanying assessment criteria are based on the codes of practice provided by the ISEAL Alliance (ISEAL, 2014), as well as several criterion provided in a research by Vermeulen et al. (2013). Table 8 provides a structured overview of the good governance categories, their accompanying assessment criteria and the implications for standards attached to adhering to these criteria. The criteria will form the categorical basis for the assessment of the selected sustainability initiatives in the previous sections.

Good governance principle	Assessment criteria		Implications
Transparency	<i>Public availability</i>		<ul style="list-style-type: none"> • The standard is published and easy to obtain from the standard’s official website; • At least one previous version of the standard is published, thus clarifying changes over time.
	<i>Clear governance process</i>		<ul style="list-style-type: none"> • Clear statement of the governing organization and its managerial functioning; • Clear statement of what exactly the standard evaluates (i.e. scope of the standard).
	<i>Information provision on participants (amount/names)</i>		<ul style="list-style-type: none"> • Quantitative information on certified participants involved is published; • Qualitative information on names and types of participants involved is published.
	<i>Involvement of stakeholders</i>		<ul style="list-style-type: none"> • Public availability of the stakeholder process / types involved in forming / revising the standard.
	<i>Client continuity</i>		<ul style="list-style-type: none"> • Assuring clients for continuous involvement within the standard development process and decision-making process of board + members.
	<i>Impacts</i>		<ul style="list-style-type: none"> • Assessment of impacts of standard is provided with quantitative and qualitative data included.
Legitimacy	Regulatory system quality	<i>Accuracy</i>	<ul style="list-style-type: none"> • Auditors are competent and understand their tasks; • Consistent interpretation of what compliance means in practice and clear and consistent auditory

			procedures.
		<i>Impartiality</i>	<ul style="list-style-type: none"> • Auditors / evaluators are independent from standard.
		<i>Rigor</i>	<ul style="list-style-type: none"> • Checks occur periodically and thoroughly • Evaluations are understandable for actors involved • Scientific substantiation of auditing system
	Equitability and inclusiveness	<i>Accessibility</i>	<ul style="list-style-type: none"> • The standard does not discriminate against interested parties on the basis of e.g. cost, restrictions of access; • Engage all interested stakeholders (e.g. physically going where they are, information in local languages); • The standard does not discriminate based on the size of the enterprise.
		<i>Capacity</i>	<ul style="list-style-type: none"> • Training and capacity building for enterprises; • Local assurance providers are available;
	<i>Engagement</i>		<ul style="list-style-type: none"> • Standards represent the diverse stakeholder views; • Opportunity for stakeholders to provide input on the standard's contents and statuses of certification assessments, as well as certification withdrawal input.
Authenticity	Credibility	<i>Truthfulness</i>	<ul style="list-style-type: none"> • Claims and labels convey the benefits of purchasing a certified product or service; • Claims are easy to understand, accurate and precise.
		<i>Traceability</i>	<ul style="list-style-type: none"> • There exists a clear link between the certification process and the (precious mineral) product.
	Accountability	<i>Complaints procedure</i>	<ul style="list-style-type: none"> • A complaints mechanism is in place that requires that there is a consistent and independent mechanism for considering complaints for both standard-setting and to assurance (assessments and decisions).
		<i>Local 3rd-party monitoring</i>	<ul style="list-style-type: none"> • Use of continued local assurance providers allows for greater accountability to stakeholders in the region.
Effectiveness and efficiency	<i>Relevance</i>		<ul style="list-style-type: none"> • Focus on hotspots, i.e. most essential regions/problems: target most important countries; • Periodical renewal of the standard occurs.
	<i>Co-ordination</i>		<ul style="list-style-type: none"> • In case of overlap with other standards there is cooperation to improve consistency between them
	<i>Financial effectiveness</i>		<ul style="list-style-type: none"> • The financial model of the standard is healthy; • Resources are divided effectively amongst goals.

Table 8. Good governance quality assessment criteria for assessing sustainability standards and their explanations, adapted from ISEAL (2014) and Vermeulen et al. (2013)

Next to the criteria in Table 8, in order to distinguish between the quality performance of the different categories, a scoring system will be implemented. This scoring system will be used to determine the quality of the basic good governance-characteristics described in Table 8. For each category, a different meaning might be assigned to a different score. However, the end-score will indicate whether one standard scores better than the other, i.e. which standard will be more preferable when implemented in practice. The overview in Table 9 provides the possible scores for the categories indicated before. This table can be used as a reference table for the scores indicated in the analysis in the upcoming sections. The scoring system is only used as an indicator of whether a standard has certain characteristics or not: i.e. the final total score will not necessarily indicate that one standard is better than the other.

Good governance principle	Assessment criteria		Score range and explanation
Transparency	<i>Public availability</i>		0 = No availability 1 = Availability
	<i>Clear governance process</i>		0 = No information provided 1 = Some information provided 2 = Extensive information provided
	<i>Information provision on participants (amount/names)</i>		0 = No information provided 1 = Some participants mentioned 2 = Extensive information provided
	<i>Involvement of stakeholders</i>		0 = No information provided 1 = Some information provided 2 = Extensive information provided
	<i>Client continuity</i>		0 = No information provided 1 = Some information provided 2 = Extensive information provided
	<i>Impacts</i>		0 = Impacts not addressed on website 1 = Addressed and some examples given 2 = Several examples or cases provided 3 = Extensive information on impacts provided
Legitimacy	Regulatory system quality	<i>Accuracy</i>	0 = No procedure in place or provided 1 = Procedure is mentioned 2 = Clear information on procedure provided 3 = Procedure adheres to ISEAL Codes of Conduct
		<i>Impartiality</i>	0 = No information provided/suggestion of dependency 1 = Independent auditors confirmation
		<i>Rigor</i>	0 = No information provided 1 = Periodic evaluations take place, are understandable 2 = Periodic extensive evaluations take place 3 = Periodic extensive evaluations with improvement syst.
	Equitability and inclusiveness	<i>Accessibility</i>	0 = No information provided 1 = Mentioning of equal treatment of participants 2 = Programme to actively engage with participants
		<i>Capacity</i>	0 = No information provided 1 = Mentioning of capacity building or training 2 = Extensive capacity building and/or training available
	<i>Engagement</i>		0 = No information provided 1 = Participants can influence standard 2 = Extensive participant influence / standard input-based
Authenticity	Credibility	<i>Truthfulness</i>	0 = No information provided 1 = Claims made by standards are understandable for target audience (i.e. consumer or business)
		<i>Traceability</i>	0 = No information provided 1 = Clear link is made between certification process and product
	Accountability	<i>Complaints procedure</i>	0 = No information provided 1 = Complaints procedure is mentioned 2 = Extensive complaints procedure focused on target audience 3 = Complaints procedure is extensive and focused on target audience, with extensive and clear information provided
		<i>Local 3rd-party monitoring</i>	0 = No information provided 1 = 3 rd party monitoring system is tailored to local needs
Effectiveness and efficiency	<i>Relevance</i>		0 = No information provided 1 = Focus on hotspots 2 = Focus on hotspots with clear envisioned target plan
	<i>Co-ordination</i>		0 = No information provided 1 = Cooperation with other standards occurs in case of overlap
	<i>Financial effectiveness</i>		0 = No information provided 1 = Financing model stated 2 = Effective financing model provided

Table 9. Scoring system explanation for good governance quality assessment criteria

7.2. Comparing the standards – Transparency

When it comes to the transparency of the sustainability standards, the first important feature is to gain a clear overview of the relevant information concerning the standard development and content. The information should be freely available and published on the website of the standards governing organization(s). Secondly, any updates in the standard’s content should be published and clarified: at least one draft version and one final version should be available at any given time (ISEAL, 2014). The arguments for these revisions of the standards should be provided in close proximity to the updates versions, preferably within the same documents. Further assessment criteria focus on the number and names of suppliers and if they are explicated by the respective sustainability standard or certification scheme. Vermeulen et al. (2013) state these elements to be important within the context of sustainable standard transparency assessment: by making publicly available how well your standard is applied in practice, stakeholders might gain insight into the standard’s performance in practice. Also, it should be clear what the governing organization is and who is evaluated by this organization (i.e. what the applicability scope is of the standard itself). Furthermore, the process and types of stakeholder engagement in forming or revising the standard should be made publicly by those evaluating and revising the standard. Stakeholders should be able to influence the standard’s development and have a say in its updates. Additionally, another requirement for the criterion of transparency is the assurance for clients to be continuously involved within the process of standard development and involved within the decision-making processes of the board and its members (which is referred to as ‘client continuity’). Finally, statements made about the impacts of the standard in practice and the degree to which such information is provided on the standard’s website or related publications has been assessed.

Standard	Transparency performance															Score (max = 12)
	Publicly available?			Information publicly available on:												
	Current standard	Previous version(s) standard ³		Clear governing process	No. certified participants stated	Names of suppliers provided	Involvement of stakeholders	Client continuity	Impacts							
KPCS	✓	1	✓	✓	2	✓	1	✗	0	✓	2	✓	2	✓	1	9
EITI	✓	1	✓	✓	2	✓	1	✓	1	✓	2	✓	2	✓	2	12
Fairmined	✓	1	✓	✓	1	✗	0	✗	0	✓	1	✓	1	✗	0	4
RJC	✓	1	✓	✓	2	✓	1	✗	0	✓	2	✓	2	✓	3	11
IRMA	✓	1	✗	✓	1	✗	0	✗	0	✓	1	✓	1	✗	0	4

Table 10. The mining-related standards’ performance on transparency-related characteristics

The Kimberley Process Certification Scheme (KPCS) provides a clear overview of its most up-to-date version of the standard and its performance per participating nation, as well as the core documentation in which the basic principles and performance regulations are determined (KPCS, 2014a). The continued documentation of the development of the voluntary initiative also shows the changes within the KCPS over time, which allows for a clear and freely published stream of documented standard progress. While older information is somewhat more difficult to find, specific detailed data can certainly be found using several tools on the standard’s website. The diamond certification tool applies a clear process statement of the governing board on its website on an annual basis, where the selection process is also stated and justified clearly and briefly, while more detailed information is available in the documentation archives published online (KCPS, 2014b). Moving on to the clarification of the

³ The previous standard has no score, as the public availability of the standards is only based on whether it is available or not.

suppliers of KPCS-certified products shows a minor problem. While per region an annual publication is provided on the number of KPCS-supplier export performances, the names and specifics of these data are not provided. Moreover, there is some unclearness in these publications about the way in which the supplier data was extracted and from which (types of) sources. Furthermore, the stakeholder positions are clearly published and participation in working committees and boards is mentioned and justified. This system ensures continued participation and commitment of participating parties, which once committed must maintain the regulatory system provided in the core and revised KPCS-regulatory documents. Less clear is the standard about the practical impacts: besides some information about the enforcement of acting against fake KPCS certifications in certain participating nations, not much additional impact-based information is provided.

The Extractive Industries Transparency Initiative (EITI) focuses its activities on improving the transparency in the mining industry, which would imply that the organization and standard itself also have a high degree of transparency. The EITI's performance on these issues, as can be seen in Table 10, is indeed quite impressive, scoring maximum points on transparency characteristics overall except for minor deficiencies in the provision of data on the impacts. The standard's current and previous versions are clearly documented on the website and within their standard document a lot of information is provided on the processes of the standards and the requirements of participants, as well as the core underlying principles (EITI, 2013). The documentation is extensive and provides information on the stakeholders involved, as well as a statement of the total number of participants and their possible roles within the application and development of the EITI-standard (EITI, 2014a; 2014b).

The EITI Standard

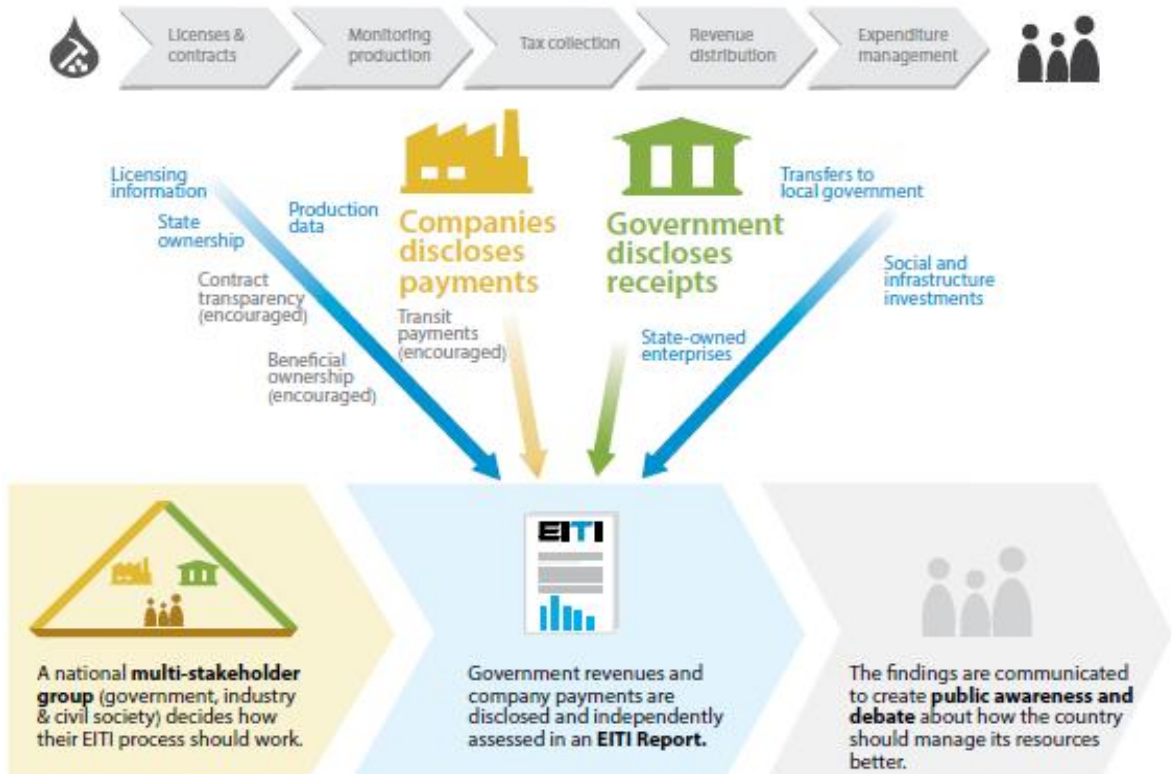


Figure 19. Extractive Industries Transparency Initiative's organizational structure (EITI, 2013, p.8)

Stakeholder involvement is shaped mainly by the EITI Board, which institutionalizes the involvement of several types of stakeholder groups (governmental, company and civil society) into the iterative process of refining the EITI-code, while also being responsible for the implementation and expansion of the EITI initiative itself. Figure 19 clarifies the main structures of the involvement process and how the standard's management structures are organized, as well as the central features of the standard. As can be seen in the aforementioned figure, next to the stakeholder's role in shaping the standard, the stakeholder board also plays a crucial role in the continuation and expansion of the EITI-initiative. The existence of the board also ensures continued implementation and involvement of member actors, which is a positive element in terms of client continuity. With concern to the impact statements and data provision, the quantitative data on the impacts could have been more extensive and detailed overall. Some cases and case-studies on impacts are currently provided, while data on the total impact of the standard is currently lacking or unclear.

As a cooperative project between the Fairtrade Labelling Organizations International (FLO) and the Alliance for Responsible Mining (ARM), the Fairmined standard is a multi-stakeholder project that is relatively new: only two versions are currently available and published and three annual reports are currently available (ARM, 2014a). This relative newness also causes the transparency of the standard to be below average as compared to the other standards under analysis. The only stakeholders mentioned are several partner organizations and their roles within the context of the Fairmined standard (Fairgold, 2014). Stakeholders take part in the standard committees, with specific distribution of the type of stakeholders and their representation numbers and role stated clearly in website-published reports (ARM, 2012a). Unclear remains the number of stakeholders involved, and only several examples of involved stakeholders are provided in brief (ARM, 2014b), which would be insufficient as compared to the correct publication practice, i.e. some improvement is required in this respect. Being a multi-stakeholder initiative, the involvement of and continued participation in the standard's process and management is regulated and clearly elaborated upon in several reports (ARM, 2012a; 2012b). For the impacts, the Fairmined standard does currently not provide any overviews. This might be due to the fact that the standard is relatively new, however, some information could already have been provided in the annual reports or in separate publications.

The Responsible Jewellery Council (RJC), being a well-known and influential sustainability standard, ranks among the most transparent sustainable mining initiatives out there. Next to providing several versions of its Code of Practices (RJC, 2014a), there is also a clear section explaining the structure of the standard's management structure. This includes a section on the *RJC Standards Committee*, which is a multi-stakeholder group consisting of a multitude of supply chain, civil society and governmental actors (RJC, 2014b). While clearly providing names of the members of this committee as well as their duties, stakeholder involvement procedures, no indication is provided about the names of involved participants in the supply chain itself. The extensive and clear information provision on the stakeholder involvement, including procedures, types of stakeholders, partnerships, degree of involvement in standard development and management is however more than making up for this minor deficit in the RJC's transparency score. Furthermore, the RJC is a certified full member of the ISEAL Alliance, which in theory assures the conformance to high-quality publications in a transparent and concise manner (RJC, 2014c). The high degree of transparency in the impact-category is mainly attributed to the recently published impacts report (RJC, 2014d), while before only several case-studies were provided on the website, lacking other types of transparency on impacts (RJC, 2014e). This has thus clearly been improved recently, which allows us to increase the impact-score considerably. The impact report provides extensive data on multiple impact types (from participatory increase to actual increase in sustainability performance) as well as case-insights (RJC, 2014d).

The Initiative for Responsible Mining Assurance (IRMA), being the newest initiative of those analyzed, clearly does have some work to do in terms of transparency. However, because of its relative newness, there is also a lot of opportunity to improve. Currently there is only one (draft) version of the standard available (IRMA, 2014a), which obliges us to tick the red box for ‘*previous version(s)*’-category (IRMA, 2014b), which however does not impact the IRMA’s transparency score. While the process of governance and the organization of the standard itself is provided within the appropriate documentation (IRMA, 2013), there is no further detailed overview of the stakeholders and suppliers involved with the standard besides some brief statements of partner companies involved in the initiative (IRMA, 2014c). Being a B2B-standard, the IRMA is not necessarily involved with the communication towards consumers, which benefits the overall score of the initiative, as only partnering businesses would need to be addressed for the sustainability communication. IRMA is chaired by a steering committee of stakeholders, thereby allowing for influence of these stakeholders on a periodical basis on the development and implementation processes of the standard itself (Resolve, 2010). The standard’s committee process therefore certainly leaves room for the continued involvement of stakeholders, including a division between types of stakeholder within the chair’s member positions (Ibid.). Since the standard is currently still somewhat in the developmental stage, there is currently no information provided about the impacts of the standard.

7.3. Comparing the standards – Legitimacy

Any organization or consortium of actors involved in the creation and maintenance of a sustainability standard will need to take into account the concept of legitimacy in order to be successful as an initiative within the market, since the enforcement of regulation involves a certain amount of trust. Legitimacy refers to the “*justification of authority*” (Glasbergen & Schouten, 2011, p.1891) and is “*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values, beliefs and definitions*” (Suchman, 1995, p.574). With this interpretation, several concepts and/or categories of concepts as described by ISEAL (2014), Vermeulen (2014) and Vermeulen et al. (2013) can be subdivided within the concept of legitimacy.

Three major categories are included for the purpose of our sustainability standards assessment: ‘regulatory system quality’, ‘equitability and inclusiveness’, as well as ‘engagement’. The subcategory of *regulatory system quality* requires the standard to be *accurate* in the verification of the auditing process, as well as to ensure the expertise and correct and consistent periodically performed controls by the auditors. Furthermore, the auditors should be an *independent* body that act separately from the standard (i.e. impartiality). The concept of *rigor* refers to whether the evaluations are understandable for those parties involved and whether checks by auditors occur regularly and thoroughly with a methodology that could be scientifically applied. Another theme that can arguably be seen as falling under the umbrella of the legitimacy-concept is that of equitability and inclusiveness (Frederick, 1991), i.e. all parties are treated equally and without discrimination and have a fair and equal chance of participating. After all, the justification of authority can only be granted if all stakeholders involved get a fair and equal treatment (Ibid.). This includes *capacity* building for ‘weaker’ actors such as artisanal mining companies or (groups of) individuals: i.e. provision of training and setting up local assurance mechanisms. Furthermore, in order to manage and maintain a legitimate sustainable standard, the *engagement* of all stakeholder views is essential, which does require these actors to be able to get involved within the decision-making process of the managerial board of the focal standard. Table 11 provides the schematic overview of the legitimacy performance of the analyzed mining standards. The results in the table will now be briefly discussed for each individual standard under analysis, in order to clarify the performance scores provided in the overview of Table 11.

Standard	Legitimacy performance											Score (max =13)	
	Regulatory system quality					Equitability and inclusiveness				Engagement			
	Accuracy		Impartiality		Rigor	Accessibility		Capacity					
KPCS	✓	1	✗	0	✓	3	✓	2	✓	2	✓	1	9
EITI	✓	1	✓	1	✓	3	✓	2	✓	2	✓	2	10
Fairmined	✓	1	✓	1	✓	2	✓	2	✓	2	✓	1	9
RJC	✓	3	✓	1	✓	3	✓	2	✓	2	✓	1	13
IRMA	✓	1	✓	1	✓	1	✓	1	✗	0	✓	1	5

Table 11. The mining-related standards' performance on legitimacy-related characteristics

The Kimberley Process Certification Scheme's (KPCS) performance on legitimacy issues is relatively good, while the statements made about issues related to the concept are scarce, i.e. not much information is provided on the topic by the standard itself. The core document of the KPCS-standard does provide the majority of confirmation about the procedures related to auditing (KPCS, 2010). This document states that the audits are performed independently by individual companies and supported by industry-induced penalties when non-compliance is confirmed. The KPCS is therefore accurate in clarifying what the auditing procedure entails, as well as what the preconditions for the respective members are to comply to the regulatory systems checked by the auditors themselves. The fact that the auditing is performed independently as stated in the core document (Ibid.), as well as the statements made in documentation by the KCPS Working Group on Monitoring (KCPS, 2007), clearly the use of independent auditing is confirmed. However, external studies criticizing the KPCS-working practice provide some problematic issues in the context of impartiality: "several retail surveys conducted by Global Witness and Amnesty International since the implementation of the System of Warranties have revealed that most major jewelers in the UK and the US don't have their diamond supply chain independently audited" (Global Witness, 2004). Therefore, we cannot be completely sure about the confirmation of impartiality in all cases. As stated in the scoring system, the suggestion of dependency, i.e. the auditors not being fully independent in some cases, requires us to score the KPCS's impartiality with no points. While the issues related to the criticisms might already have been resolved at the time of analysis (i.e. the source of the critique is relatively old), it is not possible to confirm full impartiality, as no clear answers to these critical studies have been provided by the KPCS or external actors. The audits are performed on an annual basis, of which the statistics are collected and published on a special website (KPCS Statistics, 2014). Thereby, the scientific approach to collecting data and performing a rigorous annual audit for those countries involved in the KPCS-system creates a solid auditing system in theory, thus scoring maximum points for the rigor-category. Furthermore, the KPCS is confirmed to be accessible to all participants willing to conform themselves to the regulations and systems of the initiative. This equitable approach is formulated in the core document as follows: "Participation in the Certification Scheme is open on a global, non-discriminatory basis to all Applicants willing and able to fulfill the requirements of that Scheme" (KPCS, 2010, p.8). This equitable participation possibility is strengthened by the possibility for potential participants to acquire the needed (financial) resources in order to adhere to the KPCS regulations (KPCS, 2006a). The capacity building is an integrated system allowing internal members to build their capacity for effectively adhering to the KPCS requirements. While training does not seem to be a core goal for this capacity building programme, the KPCS has some technical training possibilities which are externally operated (KPCS, 2011).

The Extractive Industries Transparency Initiative (EITI) holds several criteria related to their auditing system. International auditing standards are implemented and adhered to by the EITI, which includes the use of expert independent administrators performing the audits with the participants of the initiative (Darby, 2008). This immediately adds the question of what exactly are these ‘international standards’, a criticism that is logically raised by Darby (2008) as well: EITI has paid little attention to the exact standards that should be met. This unclearness allows for variance in the reporting by participants, which consequently impacts the auditing system’s quality. The results of any audit by these external parties is however published and verified according to international monitoring standards, according to the EITI’s criteria (Ibid.). It also explicitly states that civil society has the option to participate and help improve the monitoring system’s design and evaluation process, as well as contributing to the debate about how to improve such auditing systems. The core document of the EITI standard provides information about the auditing system’s requirements (EITI, 2013). The independent auditors are inclined to bring forth their recommendations for improvement, thus allowing for an extensive report on the possible improvements to be made within the organization. While corrective actions are recommended after the audit has taken place, the auditors role is not to actually help improve or implement those measures. Nevertheless, the recommendations allow for a consistent set of improvements possibilities for the parties involved (Ibid.), thus making the annual audit a particularly interesting tool for potential organizational improvement. A multi-stakeholder group reviews the annual evaluations made and thereby creates a scientific ‘double check’, or peer-review if you will (Aaronson, 2011), which is beneficial to the *rigor*-category score. Furthermore, the equality of the standard is ensured in the EITI standard core documentation: *section 1.3, No. f) iii* states that it must be “ensured that all stakeholders are adequately represented” (EITI, 2013, p.13), with a continuation of how exactly this equality should look like. Capacity building is also firmly rooted within the EITI’s standard: *section 6.2, No. 3.7d* states that multi-stakeholder groups are encouraged to “undertake capacity-building efforts, especially within the civil society” (EITI, 2013, p.33), with a continuation of the related goals of this capacity building effort. Additionally, capacity development through training possibilities are mentioned in the protocol-section of the standard document. Mitigation of any financial or organizational constraints in participation should be circumvented by providing this training or by providing adequate resources. The *engagement*-category is also covered in the previously mentioned statement that all stakeholders must be adequately represented, thus applying their views within the standard’s development and overall organizational management procedures.

Fairmined, the sustainability initiative for gold, also performs its auditing procedures using an independent third-party organization (ARM, 2014c; Fairmined, 2014). The procedure for auditing is mentioned (ARM, 2014c), however, no detailed description is provided. The general procedure includes an opening meeting with the auditors, checks are performed using documentation, the report’s findings are presented in a closed meeting and compliance evidence must be provided afterwards. The standard itself requires the audits to always be verified and consequently double-checked by another expert third-party actor (Fairmined, 2014). The annual audits allow for progressive requirements from new participants, thus allowing for a gradual improvement over time (ARM, 2014c). Audits are not necessarily tailor-made for the local circumstances in which stakeholders operate, yet extensive explanations and the required audit opening meeting allows for much clarification on the part of those audited, i.e. in terms of rigor-scoring there are periodic extensive evaluations taking place for the stakeholders audited. Fairmined offers capacity building consultancy and extensive tailor-made training programs for those wishing to participate in their standardization programme (ARM, 2014d). Especially artisanal and small-scale miners are invited to participate in these capacity building trainings and courses (Ibid.). Thereby all actors willing to be part of the

Fairmined label can be introduced to the initiative and participate with needed resources (Fairmined, 2014). The standard requires participation to occur on a non-discriminatory basis to ensure this indiscriminate introduction: “*There must be no discrimination regarding participation, voting rights, the right to be elected, access to markets, access to training, technical support or any other benefit or obligation*” (Fairmined, 2014, p.25). The standard also mentions the possibility of participant’s influence on the development and iterative improvement of the Fairmined initiative itself, however no details regarding this possibility are provided (Fairmined, 2014). The *engagement*-category therefore only earns limited points in the scoring system (Table 11). The Fairmined label is recognized by several external parties, amongst which the Responsible Jewellery Council is one (RJC, 2012a). This brings us to the analysis of the RJC-mining standard, which focuses on the precious metal mining sector as a whole for the jewelry sector specifically.

The Responsible Jewellery Council (RJC) has introduced a solid auditing system that is outsourced to experts: professional companies involved in auditing take part in the qualitatively correct and systematic evaluations (RJC, 2014f). While this certainly does confirm *impartiality*, it does not tell much about the quality of the *accuracy*-category. The RJC adheres the ISEAL Code of Ethics and conforms to the ISEAL Code of Good Practice, as it is a full member of the ISEAL Alliance (RJC, 2014g). The ISEAL Code prescribes how to deal with auditing procedures in a systematic and correct way, thus ensuring a sound accuracy of the auditing system. The procedure for auditing is described in detail, as well as the criteria for selecting the auditors and answers to external criticism to the auditing procedures (RJC, 2009). For capacity building, training seminars and capacity building through resource provision allow for equal and fair treatment of all parties wishing to participate in the RJC standard (RJC, 2014h). The recently published Assurance Report, as part of the commitment to the ISEAL Alliance, explains the detailed workings of the stakeholder engagement and their influence on the standard itself, as well as their roles within the evaluation procedures (Ibid.). By letting stakeholders influence the evaluation procedures, the RJC ensures that the rigor- and engagement-categories score all available points. The methodology of evaluation is ensured by the professional third-party experts to occur in a systematic and scientifically-sound manner, thereby scoring the full points on all categories within the legitimacy category-set (Table 11).

The Initiative for Responsible Mining Assurance (IRMA), as stated before, is still in development at current times. Just like the RJC, it strives to be a full member of the ISEAL Alliance (IRMA, 2014d). Because this is not yet the case, it is not possible to provide any points for this pursuit. The verification of the procedures and evaluation will be performed by a third-party mechanism, as is confirmed by the ISEAL Alliance (2014). The IRMA does allow for stakeholder influence within the auditing procedures and states that an evaluation system will involve the stakeholders in the procedure as well. However, not much information is currently produced about these topics other than what is provided in the core document of their standard (IRMA, 2014a). Stakeholder feedback is ensured through, amongst others, online surveys and workshops (IRMA, 2014e). The lack of information does unfortunately not allow for going into further details or providing any high score for the IRMA in the legitimacy-category.

7.4. Comparing the standards – Authenticity (credibility and accountability)

A third category, primarily connected to the legitimacy of sustainability standards, is the degree of authenticity, which is a term used in this research to collect criteria that can be placed under the credibility and accountability-categories. The degree of credibility of a standards can primarily be explained by the recognition of the viability of the focal standard in being effective in achieving its sustainability objectives (Vermeulen et al., 2013). For the purpose of assessing the selected standards,

the recognition of a standard by third-parties, including internal actors such as involved stakeholders and individuals is essential for being and remaining successful. Convincing these actors of the credibility of your initiative essentially means to convince skeptical actors, especially stakeholders and potential companies that are eligible to adopt your standard, to assure them of the quality of your standard and organizational abilities (Dando & Swift, 2003). For the purpose of the analysis we will see the concept of credibility as being ‘truthful’ and ‘traceable’, i.e. credibility is referred to as the degree of trust that can be put in the statements, claims or requirements of the focal standard (Table 12). *Truthfulness* mainly refers to the quality of the claims made by producers about their product or service. In order for a sustainability standard to be truthful in its claims, the targeted audience of the standard must be correct in the claims made about the sustainable properties of the product, i.e. gold, platinum or diamonds. These claims must be easy to understand and accurate in their wording. Thus, in practice, the requirements of the sustainability standards for the participants of this standard should be straight-forward and precise in their vocabulary. These claims can therefore be easily communicated further upstream in the commodity chain, which allows for easy and understandable claims that should actually be applied to the product under scrutiny. Furthermore, the *traceability* states that a clear link can be made between the standard and the product itself: i.e. the standard’s requirements should be applicable to the precious mineral targeted by the sustainability initiative. Whereas some standards (e.g. Global Compact, ISO 14000, etc.) can be applied to the precious mineral mining industry, not all requirements necessarily are focused on the precious mineral product under scrutiny.

Standard	Authenticity performance								Score (max = 6)
	Credibility				Accountability				
	Truthfulness		Traceability		Complaints procedure		Local third-party monitoring		
KPCS	✓	1	✓	1	✓	1	✗	0	3
EITI	✓	1	✓	1	✓	1	✓	1	4
Fairmined	✓	1	✓	1	✓	3	✓	1	6
RJC	✓	1	✓	1	✓	3	✗	0	5
IRMA	N/A	//	✓	1	✓	1	✗	0	(2)

Table 12. The mining-related standards’ performance on credibility-related characteristics

Next to the credibility of the standards, the responsibility or *accountability* of the standards to account for possible complaints on different levels is another important feature that requires attention in the light of the good governance quality assessment. Accountability concerns the “*right to receive information and the duty to supply it*” (Gray, 1992), i.e. both the exchange of information about the standard and its functioning, as well as the correct exchange of information between stakeholders and the standard itself are included within this definition. Kolk (2008) argues that accountability, in the context of CSR business practices, is expanding its requirements to also cover issues related to employment and ethical concerns. However, she also states the traditional accountability issues are mainly covered by sustainability reporting in a business context (Ibid.). The credible and accountable nature of the standards stems from the ability to remain truthful and responsible in terms of procedures with stakeholders, as well as the tailor-made procedures that aid these stakeholders in participating. Therefore, the main focus in terms of accountability is formulated here as the application of an adequate *complaints procedure*, in which stakeholders are able to voice their possible improvements for the standard’s organization or procedures. Furthermore, all contact between the organization of the

sustainability initiative and the stakeholders participating are ideally tailored to local or regional needs or requirements. This implies that *local third-party monitoring* is adapted to local business practices, customs or other needs that are specific in the local context.

Looking at the performance of the standards on these criteria, the Kimberley Process Certification Scheme (KPCS) provides a truthful and traceable standard in terms of credibility. The truthfulness is based on the fact that the sustainability standard for diamonds, being a B2C-standard, provides a clear and precise set of claims in relation to their practical implementation requirements and procedures of certification (KPCS, 2010). The requirements for sustainable diamond production are systematically and procedurally implemented. The claims of the KPCS are certain in that the sustainable production method either earns participating stakeholders a KPCS-certification if they adhere to it, or do not receive certification if they do not meet the strict requirements of the certification itself (Ibid.). This also confirms the standard's traceability, i.e. the requirements are specially made for diamond mining. The accountability of the KPCS has several problematic issues in terms of good governance quality. In terms of the complaints procedure, the KPCS has a Contact Point where participants can ask questions and make complaints. However, a steering committee of the KPCS has reviewed this Contact Point as problematic and in need of better communication (KPCS, 2006b). Problems mainly concern the fact that some questions receive late answers or no answer at all, as well as existing language barriers or technical communication barriers (e.g. limited communication possibilities due to lack of internet access). Weyzig (2004) mentions that participating nations have the possibility to send other implementing nations a review committee if they feel like these other nations are inadequately implementing the KPCS. This allows for resolving complaints on a peer-review based system in terms of correct implementation of the standard. The monitoring by a third-party is partially locally flavored, in the sense that neighboring countries with similar cultures, situations and viewpoints can assess and peer-review their neighboring participating countries (KPCS, 2006). The peer-review mechanism does however still require a centrally-operated committee that checks for the correct KPCS-implementation. This still means that central authorities are responsible in a systematic and non-local way for the assessment of the implementation, even though the initiation for the implementation check can be initiated on a peer-review basis. This is however insufficient to score points for local monitoring implementation (Table 12).

The Extractive Industries Transparency Initiative (EITI) is a standard that focuses on the increase of transparency with regard to the (non-)sustainable mining practices of the extractive industry, i.e. their product is essentially transparency improvement. The claims made about this are systematic and precise, i.e. no debate can be held about the meaning of the claims made, as they are qualitatively correct and core principles are applied throughout the process of implementation of the standard (EITI, 2013). The transparency as a main product that needs to be implemented within the extractive industry is correctly communicated and is only applicable to mining companies targeted by the EITI (Ibid.). This thus confirms the traceable-nature of the standard. In terms of complaint procedures, several sources mention the existence of such complaint systems, yet only few seem to explain what exactly this complaints procedure entails or how it functions exactly. The standard of the EITI (2013) states that the complaints will be referred to the EITI Board (or Association), and this board has the authority to dismiss if they deem complaints trivial, vexatious or unfounded. No clear explanation is provided for what exactly this entails, which basically could mean that all complaints could be dismissed if the EITI does not deem them to fit their purposes, which obviously does not adhere to good governance principles. Furthermore, the local third-party monitoring is confirmed by both Aaronson (2011) and EITI (2009), stating that: "*Civil society is actively engaged as a participant in the design, monitoring and evaluation of this process and contributes towards public debate*" (p.42). Aaronson (2011) states

that this contribution entails the involvement of local NGO's in the organization of the monitoring procedures on a local or regional level, which might deviate from the procedures in other regions.

Fairmined, focusing on gold mining in particular, has specific product-section embedded in its standard that describe the properties of what a 'Fairmined gold-product' actually entails (Fairmined, 2014). Furthermore, the Fairmined claims for silver and platinum as an extension are also taken up in the same standard. The exact scope and geographic areas including these production systems for the Fairmined-label are indicated and provide a clear overview of when the claim of a Fairmined-label can and cannot be made (Ibid.). Clearly, the particular focus and standard boundaries indicated in the Fairmined standard also do account fully for the traceability, i.e. it is clear that the claims made provide a clear link between sustainable gold mining as the product and the requirements for the sustainable mining procedures in order to be eligible for the label 'Fairmined'. Furthermore, the complaints procedure is extensive and detailed, and provided on the Alliance for Responsible Mining's website in separate published report (ARM, 2012c). Clear and detailed requirement, procedures and responses are indicated in this report in order to be able to fully and systematically adhere to any complaints made by participants or candidate participants. The extensive explanation of the complaints procedure allows us to assign the full score to the *complaints procedure*-category. For the local monitoring, the standard (Fairmined, 2014) describes how next to expert monitoring there is an additional monitoring system which allows the community to correct internally any non-commitment to the principles of the Fairmined standard. This allows the monitoring to become tailored to local needs and thereby improve overall well-being in social and environmental terms. This brings us to the conclusion that the maximum score for authenticity-issues is assigned to the Fairmined standard (Table 12).

The Responsible Jewellery Council (RJC), mainly focuses on the jewelry-sector and related products, both also aims to improve the sustainable practices of the precious mineral supply chains (RJC, 2013). The claims made in their standard do link well with these targets and allow for the potential greening of the supply chains for jewelry production. The focus on this sector is clearly visible within the wording of the standard and claims made do link well with the sector-specific requirements (Ibid.). Furthermore, the truthfulness of the claims made about the product and the sector are precise in their wording, since procedures and requirements of the standard are outlined extensively and consistently throughout the standard (Ibid.). The accuracy of the claims is visible through the Chain-of-Custody standard and requirements: they convey participants to actively engage in sustainable production methodologies (RJC, 2012b). Just like the Fairmined standard, the RJC has a separate document for the complaints procedure (RJC, 2012c). Their complaints mechanism described in this document describes how the standard responds to complaints with regard to possible non-conformance by participants, while also providing information about the actions these participants must take to file a complaint. The system is explained thoroughly and extensive information about the procedures leave no room for debate about how a complaint should be filed and which party involved fulfills which role(s). Therefore, the full score must be assigned to the RJC for their extensive complaints possibilities and transparency of procedures. Concerning the local monitoring-category, the RJC does not provide any information about adaptation of monitoring procedures to better suit local or regional needs or requirements. RJC (2014i) does provide clear and detailed information about their monitoring and evaluation programme, but does however not mention local circumstances or adaptations in local context. While this does not necessarily imply that the monitoring system is flawed, it does have consequences for the score in the local monitoring-category for the RJC (Table 12).

The Initiative for Responsible Mining Assurance’s (IRMA) first draft standard provides a promising set of claims which cannot be verified yet, since the standard is yet to be implemented in practice. However, it can be noted that the standard itself is certainly tailored to the targeted mining products (IRMA, 2014a), which include that of precious minerals. The standard itself does focus on the complaints procedures as well (Ibid.): the ambition is that a grievance mechanism for possible problems is implemented and disciplinary measures can be taken towards participants if required. The implementation of the complaints mechanism seems ambitious but feasible in practice. Furthermore, no mention of local third-party monitoring is made as of yet. The final score (Table 12) for the IRMA in this section does not really portray its true potential, but this is mainly due to the lack of information and implementation practice at current times.

7.5. Comparing the standards – Effectiveness and efficiency

The effectiveness and efficiency of a sustainability standard is mainly determined by the quality of relevance, coordination and effectiveness of the respective standard. The relevance can be described as being the accuracy of the focal standard in terms of their focus on hotspot regions or problems. The main question to be asked here is how much the standard is relevant in the context of contributing to sustainability problems in the precious minerals mining sector on a global level. Whereas the true ‘correct focus’ of a standard cannot be pinpointed exactly within this analysis, an indication of whether the standard under scrutiny is on the correct path in solving sustainability issues in the mining sector can however be made (i.e. no points are provided only when the standard barely contributes to the improvement of sustainability within the mining sector). Furthermore, the *coordination*-category refers to the possible cooperation between different standards when overlap or complementary systems exist. It can be resource-efficient to combine forces with ‘competing’ standards in order to attain a more effective sustainability impact in the long run. Additionally, the effectiveness of the internal finances, being the internal division of financial resources towards attaining certain goals or targets is another category covered in this section (Table 13). The financial model of the standard’s organization should be healthy in order to ensure continued existence (and thereby stability for its participants) and resources should be effectively divided between the relevant goals.

Standard	Effectiveness and efficiency performance						Score (max = 5)
	Relevance		Co-ordination		Financial effectiveness		
KPCS	✓	1	✓	1	✗	0	2
EITI	✓	1	✓	1	✓	2	4
Fairmined	✓	1	✓	1	✓	1	3
RJC	✓	1	✓	1	✓	1	3
IRMA	✓	1	✗	0	✗	0	1

Table 13. The mining-related standards’ performance on effectiveness- and efficiency-related characteristics

The Kimberley Process Certification Scheme (KPCS) is one of the core sustainability standards within the diamond mining sector (Bone, 2012). The relevance of this standard for the diamond sector has been and still is of great importance: the problem of blood diamonds has been a major pressing (hotspot) issue in recent years which has been a major point for KPCS’s existence (Ibid.). While the influence of the KPCS in terms of sustainable diamond mining reach further, fighting this issue alone would already require us to assign a positive score for the KPCS for the *relevance*-category. The KPCS is involved in cooperation with the Communities and Small Scale Mining (CASM) initiative

and the Diamond Development Initiative (DDI). The former has been involved in conferences about diamond mining together with the KPCS (KPCS, 2014c), and the latter has been created as a result of the KPCS to strengthen its impacts in the diamond mining sector for Africa in particular (KPCS, 2014d). Mention of long-term cooperation or further details about cooperation with these the initiatives are however lacking. What also is missing from the publications provided by the KPCS is a financial plan or a statement about their origin of financial resources. While one would exist this to be provided in the light of a transparent sustainability standard, no such data is provided. Therefore, the financial effectiveness category cannot be assigned any points (Table 13).

The Extractive Industries Transparency Initiative (EITI) aims to improve the transparency of mining companies and their sustainable performance. Thereby the standard provides a clear incentive for the mining industry to participate actively in sustainable mining practices and report about their activities. The relevance of the EITI therefore mainly lies within uncovering mining activities' problems: by applying the EITI-standard (EITI, 2013), companies commit themselves to becoming greener in their activities, or at least honest about the harmfulness of their product in a societal context, making the EITI highly relevant throughout the precious mineral mining sector. While the relevance is clear, a long-term specific plan or intermediate targets are not published or clearly provided. In terms of cooperation with other standards, the EITI has a long list of partner organizations. Amongst these partners, one sustainable mining initiative can be found (EITI, 2014c). EITI states to be partners with the International Council on Mining and Metals (ICMM), an organization focusing on, amongst others, the sustainability improvement through application of their Sustainability Charter (ICMM, 2002). Unclear is the exact nature of the partnership. In terms of financial effectiveness, the Secretariat provides a work plan amongst which the financial plans and budget divisions are uncovered as well (EITI Secretariat, 2014). This allows the EITI to score almost the maximum overall points for the effectiveness and efficiency categories.

Fairmined is the core standard for social improvement of the gold mining sector (ARM, 2014a). Their relevance is mainly found within their application in the sustainable business practices transformation of the gold mining sector: their hotspot is therefore gold as a commodity. This niche does provide a relevant ground for existence, since no other labels for sustainable gold on this scale currently are out there. Their social focus mainly stems from the fact that they are part of the Fairtrade-label group, which does however not mean that environmental issues are neglected by the standard itself. Since societal issues are among the most pressing for the gold mining sector (Kumah, 2006), this hotspot is certainly relevant. Furthermore, the Fairmined standard does not cooperate with other mining sustainability initiatives, yet does however have a large partnership base. Their gold-niche is particularly inclined to partner with other private organizations before engaging in cooperation with other standards, which allows us to still provide points for the cooperation category. For the financial accounts, statements about donors are made (ARM, 2014e), yet extensive financial plans are not provided by the Alliance for Responsible Mining.

The Responsible Jewellery Council (RJC) is a relevant initiative for the jewelry-sector, as it is specifically designed for the purpose of creating a sustainable supply chain for jewelry-products (RJC, 2013). Their participation in the pursuit for these improved sustainability circumstances for the precious minerals mining sector does make them highly relevant on the global mining level, especially for the rarer earth metals. Since these metals are often highly pollutant to local areas, their commitment certainly proves to be a hotspot. However, a specific continuation plan to continue working on these hotspots in a systematic manner is currently not provided. The RJC does not state cooperate with other sustainable mining initiatives, thereby however not losing any points since their

specific jewelry-focus allows them to partner with the private sector before actually maintaining relationships with other sustainable initiatives. Financial statements are published on the RJC's website (RJC, 2012d), however, no extensive financial plans or existing details about financial streams are provided by the RJC, which consequently does not earn them the full score here.

The Initiative for Responsible Mining Assurance (IRMA) is relevant within the context of sustainable mining because of their envisioned goals and stated company commitment (IRMA, 2014c). Their goals of providing an independent standard that brings together multiple stakeholders to improve both environmental and social circumstances of mining certainly contributes to the sustainability of precious mineral mining. As of yet, no information is provided about possible coordination or cooperation with other mining sustainability initiatives, and no extensive information is provided about their financial accounts. The only statement about finances is provided in the FAQ-section, which states some details about funding sources (i.e. mainly from the private sector and NGO's) (IRMA, 2014f).

7.6. Good governance assessment: wrapping up the results

The recent increase in sustainability standards in the precious minerals mining industry has not only brought an important governance shift in moving towards sustainable practices, but also encouraged many businesses to transform their practices for the better of society and environment. The increase of sustainability standards, some of which are more applicable to the precious minerals mining sector than others, has brought an opportunity for businesses to operate within a network of stakeholders and become part in setting up a governance platform for the industry as a whole. Many types of actors are involved within the creation and management of the standards themselves, thus allowing for a whole new business network to potentially improve the commodity chain organization throughout the sector. Whereas NGO's seem to be main initiators and pressuring actors encouraging involvement of the private sector, also initiatives between partnering businesses have sprouted new market-based sustainability initiatives. The mining industry now certainly sees the competitive benefits of being involved in CSR-activities, as well as the merit in being part of a broader network of stakeholders. This realization has certainly aided in the remarkable increase of market-based voluntary initiatives in the last two decades (Figure 18).

The recent 'boom' in sustainable mining standards does indicate that the sustainability standards as a governance tool has gained importance, yet does not say much about the quality of the sustainable performance of these initiatives. Therefore, this part of the research has aimed to uncover the main characteristics of the most relevant sustainability initiatives in the context of the precious minerals mining industry, as well as providing an indication of the good governance-quality of these initiatives. The main characteristics assessed, as well as their (qualitative) scores for several core sustainability initiatives are provided in the overview of Table 14. These scores summarize the analysis of the assessment of the characteristics of the precious mineral sustainability initiatives, yet it must be noted that the final scores only provide an indication of the quality of the standards on certain good governance-characteristics. The main categories assessed include the performance on transparency, legitimacy, authenticity, as well as efficiency and effectiveness. The remainder of this section will briefly discuss the main findings of the good governance assessment as indicated in Table 14.

One of the core features in the theory of change in moving towards sustainable mining business practices involves the improvement of transparency within the entire commodity chain. Therefore, the first assessment has been the performance on transparency-characteristics, a topic on which the standards seem to perform rather well, with the exception of Fairmined (IRMA is in development).

Category	Assessment criteria	Max. Score	KPCS	EITI	Fairmined	RJC	IRMA
Transparency	Public availability	1	1	1	1	1	1
	Clear governance process	2	2	2	1	2	1
	Information provision on participants	2	1	2	0	1	0
	Involvement of stakeholders	2	2	2	1	2	1
	Client continuity	2	2	2	1	2	1
	Impacts	3	1	2	0	3	0
Legitimacy	Accuracy	3	1	1	1	3	1
	Impartiality	1	0	1	1	1	1
	Rigor	3	3	3	2	3	1
	Accessibility	2	2	2	2	2	1
	Capacity	2	2	2	2	2	0
	Engagement	2	1	2	1	1	1
Authenticity	Truthfulness	1	1	1	1	1	N/A
	Traceability	1	1	1	1	1	1
	Complaints procedure	3	1	1	3	3	1
	Local 3 rd -party monitoring	1	0	1	1	0	0
Effectiveness and efficiency	Relevance	2	1	1	1	1	1
	Co-ordination	1	1	1	1	1	0
	Financial effectiveness	2	0	2	1	1	0
TOTAL	////////////////////////////////////	36	23	30	22	31	12

Table 14. The mining-related standards' performance scores overall

Transparency is thus highly valued by most standards, since the provision of information is often the first step towards effective communication of your initiative, allowing to improve your participation rates and involve more parties within the standard itself. For this to occur, the legitimacy of the standard must be acceptable: without being accurate and accessible standard that provides independent audits, one cannot make claims about the standard's authority and ability to transform markets. The mining standard seem to understand this well and perform relatively well on these categories, with an occasional improvement necessary in some cases. Especially information provision on the accuracy of claims seems to be an important improvement aim. Overall, the selected core standards seem to be credible and accountable in their performance: thereby being sincere and authentic to the outside world. Some standards do however require some serious improvement on their complaints procedures and adherence to localized needs and requirements. The KPCS, for example has admitted that their procedures do not always perform well in terms of complaints made, thus aiming to improve these systems in the long run. Finally the effectiveness and efficiency of the analyzed standards performs particularly bad in the provision of information about financing and financial sources and budgeting plans. Only the EITI has a clear statement and plan about how their budgetary resources are divided and will be planned in the upcoming years. Other standards might learn from the EITI in order to improve their statements and transparency on the financial sources and streams, as this might prevent possible conflicts of interest or mismanagement with financial resources. Furthermore, active coordination between standards still seems to be lacking at current times, with barely any information provided about possible cooperation between sustainable mining standards. Overall, the standards are well on their way in becoming an important CSR-tool in the precious minerals mining sector. With some improvements to be made, the standards could become a core governance tool for CSR-practices in the long run, aiding businesses in improving their sustainable performance.

- PHASE 3 -

CASE STUDY

-

**Global-national dynamics in the Namibian precious minerals
industry**

8. Global-national dynamics of sustainability standards: the case of the precious mineral industry in Namibia

The final phase of this research will bring an example case-study providing insights into the effects of global sustainability standards on a resource-dependent peripheral economy, in this case being Namibia. Furthermore, the case-study provides some insight into the interactions between Namibia as a country and the multinational corporations' CSR-efforts resulting from voluntary sustainability standard initiatives. First, an overview of the Namibian precious mineral economy is provided, after which CSR-related effects of MNC's in the context of Namibia as a country is elaborated upon. Applying our knowledge from the previous research phases, some interesting insights about the effects of the sustainability standards in a local market context can be attained.

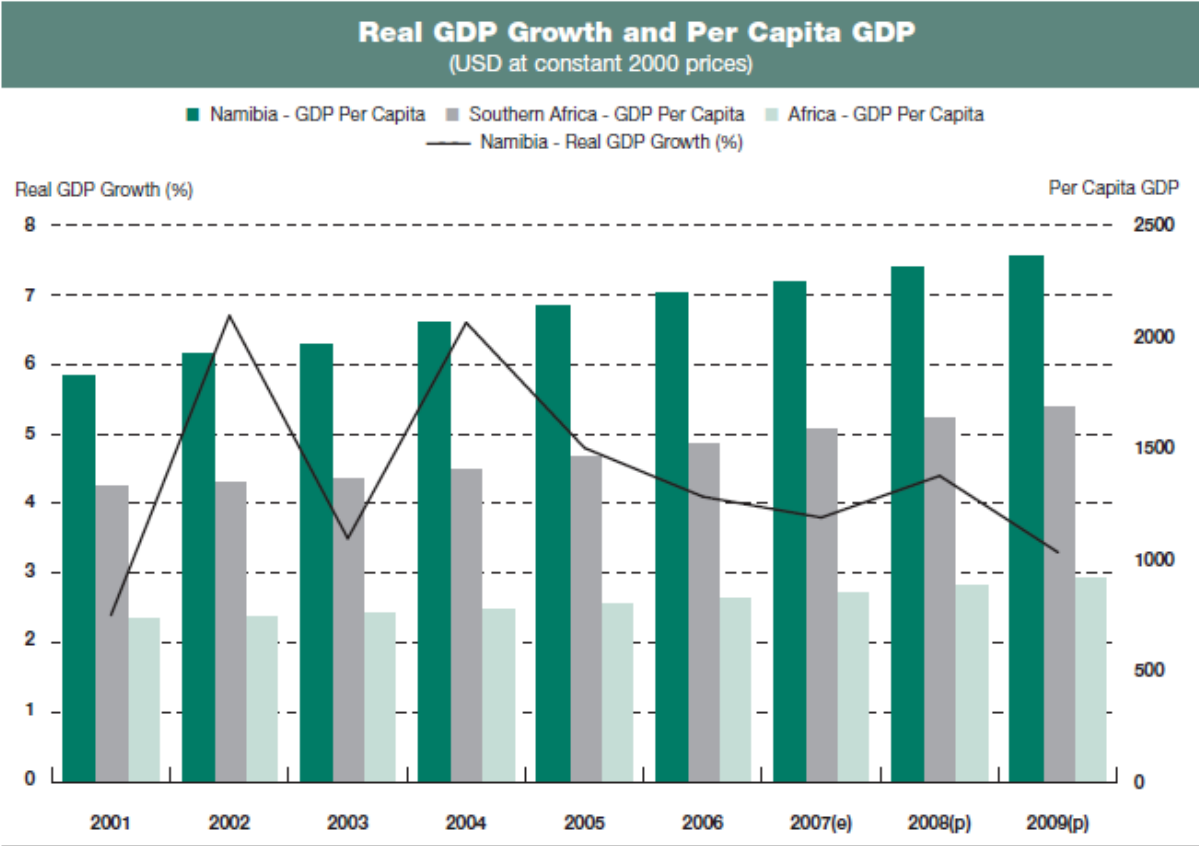
8.1. The precious mineral mining industry of Namibia

8.1.1. *The national context: a peripheral economy rooted in mining activities*

The sub-Saharan African continent is a region in development yet also a region which is generally rich in metals and minerals. In economics, the concept of the *resource curse* has often been used to describe the disability of resource-rich nations to attain wealth from its potential economic 'goldmine' (Lange, 2003). Scholars such as Auty (1993) and Sachs & Warner (1995) have proven that resource-rich developing nations do indeed generally perform worse than their resource-poor counterparts, thereby adding to the notion that the *resource curse* is actually occurring, at least taken on average. Others have suggested that the phenomenon has more connection to the quality of national governance institutions, since the resource curse does not universally occur (Mehlum et al., 2006). The debate about whether the natural resources benefit the national or regional wealth is often surrounded by ambiguity (Littlewood, 2014). Some advocates state that the mining activities creates local employment and wealth in otherwise isolated or poor regions, while others argue that the deleterious impacts of mining (environmental impacts, conflicts over land-use, rights of indigenous peoples) together with the introduction of MNC's whom reap the benefits of the resources might simply harm the resource-rich country in the long run (Ibid.). For example, in southern Africa there plenty of examples of resource-rich nations able to attain considerable wealth growth, a prime example being the country of Botswana (Sarraf & Jiwani, 2001). While also being relatively rich in natural resources, especially precious minerals, the neighboring country of Namibia has seen a "*contrasting development path*" (Lange, 2003, p.4) in terms of natural resource management. Namibia has a long history of mining activities and is mainly active in the uranium (Conde & Kallis, 2012), diamond (Mobbs, 2004) and gold (Lange, 2003) commodities sectors. For it to reap the benefits of these commodities, the natural capital need to be transformed into other types of wealth, by applying policies which promote efficient resource-extraction and maximization of resource rents (i.e. surplus value after extraction costs have been discounted for) (Lange, 2013).

Adequate governance policies on extractive activities on a national level is thus essential for attaining wealth. After independence, Namibia has seen a great improvement in foreign direct investments, a positive climate for the private sector and a general decrease in inequality issues (SARW, 2010). The employment creation and accompanying reduced poverty situation allowed the World Bank to classify the country's economy as a "*lower middle-income country*" (SARW, 2010, p.252). The GDP-growth is still in favor of the Namibian economy, since even during times of global economic recession the national GDP has risen by a few percent annually (Figure 20). Despite reduced inequality efforts, the disparity between the poorest and richest people in the country remains one of the largest in the world, largely because of the apartheid history (Ibid.). Of the population of 2.1 million people, roughly 35%

live below the poverty line (less than USD\$1 a day) and over 50% of the population is below the age of 30 (mainly due to poverty and the high HIV/AIDS prevalence).



Source: IMF and Bank of Namibia data; estimates (e) and projections (p) based on authors' calculations.

Figure 20. Namibia's Real GDP Growth and Per Capita GDP growth between 2001-2009, set off against Southern Africa and the African continent, adapted from OECD (2008)

The Namibian population is mainly urbanized, since over 60% of the Namibians are found in urban regions (Ibid.). The Namibian infrastructure is therefore focused on the urbanized regions, with main roads and railway systems leading to the largest cities and mining regions (Windhoek, Tsumeb, Keetmanshoop) and ports (Walvis Bay, Lüderitz) (OECD, 2008). It is interesting to note that most of the infrastructure investments have been gained from Asian investors, in particular from China (Foster et al., 2009). This phenomenon of Chinese investors has been prevalent throughout the sub-Saharan African region, as most of these countries are in need of infrastructure improvements and seeing social investors. China, being an economy that has seen significant economic growth in recent decades, has both the means (i.e. strong competitive construction industry) and workforce to provide the Namibian region with the needed infrastructure development (Ibid.). Also, the presence of South Africa in the mining-related regions has not decreased after Namibian independence: South Africans have been investing in large sums in their neighboring region, thereby keeping their powerful position in the hinterland despite the recent Namibian independence (SARW, 2010). Foreign investments have played a great role in the development of the Namibian mining industry, which has been and still is essential for their economic prosperity, as we will see when taking a closer look to the Namibian mining industry in particular. The next section will provide a brief overview of the Namibian precious minerals industry, limiting our scope to the three analyzed commodities. This overview will aid us to be able to further analyze the upcoming analysis of global-national dynamics of the sustainability

standards in the Namibian precious mineral industry. Understanding the market is after all the first step in being able to understand the CSR-policies and influences on a national level.

8.1.2. Namibia’s precious mineral industry: a brief overview

The mining sector in Namibia accounts for approximately 9,5% of total national GDP and 50% of total exports by 2011, of which diamond are the predominant factor as they account for 7,2% of total Namibian GDP by 2011 (Duddy, 2012). Namibia’s large diamond extraction activities make it the world’s fifth largest diamond producer with 98% of the (coastal) diamonds being of the highest (gem) quality (Afri-Can, 2014). The geological dispersion of minerals in the Namibian soils are relatively concentrated: diamond reserves predominately occur in the coastal regions (with a main concentration near the Oranjemund coast and Orange River), whereas Kimberley intrusions (i.e. those reserves under layers of soil or rock) mainly occur between the Keetmanshoop and Marienthal regions, as well as a small region in the southeast border with South Africa (Figure 21). The diamond industry is clearly dominated by NamDeb, a government-De Beers shared company. The NamDeb company primarily operates along the coastal zones of Namibia, which are particularly rich in both on- and off-shore reserves. Smaller extractive companies include Afri-Can Marine Minerals Corporation and Sakawe Mining Corporation, which account for only a minor portion of total national diamond production.

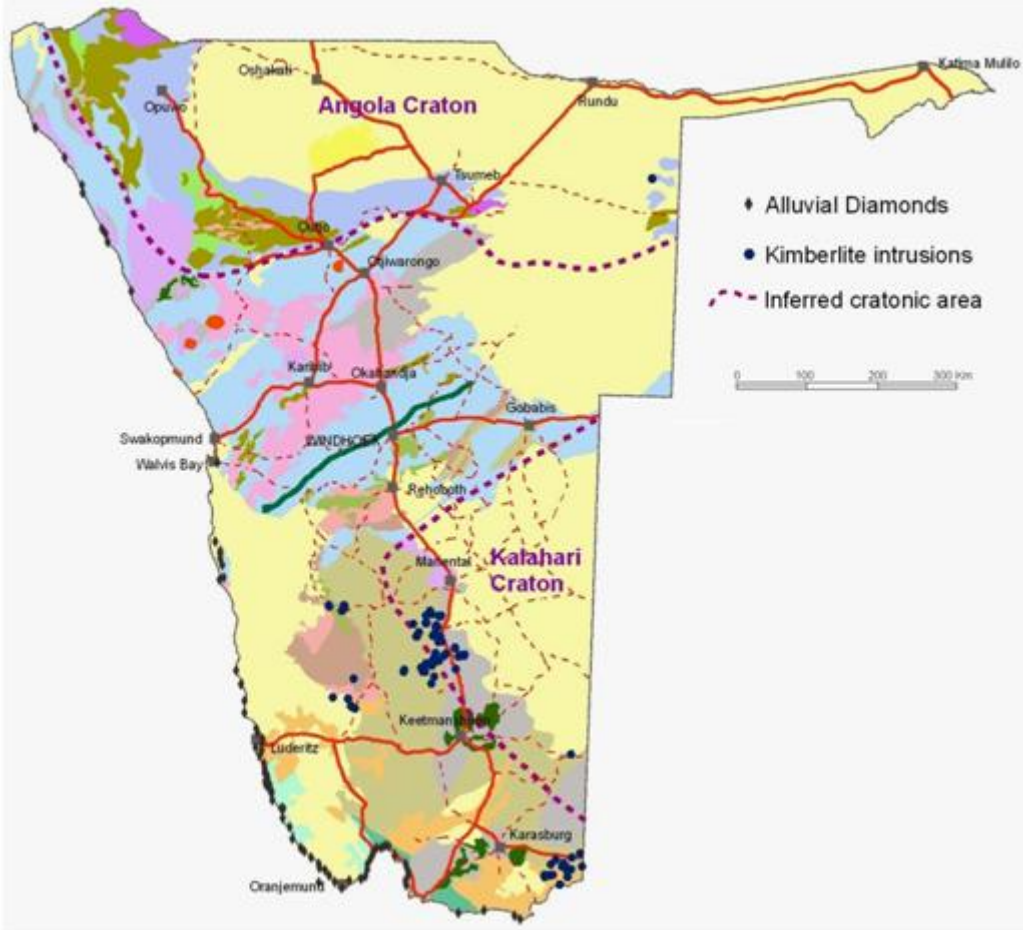


Figure 21. Diamond mining sites in Namibia, adapted from MME (2013a)

The other large precious mineral commodity within the country of Namibia is gold. As is shown in Figure 22, the gold reserves are mainly concentrated within a single region around the town of Karibib, of which the significant contributor is the Navachab mining complex (Lange, 2003). This mine, which has until recently been fully owned by AngloGold Ashanti, accounts for most of the gold

production within Namibia, with a total annual production of approximately 65,000 ounces of gold by the year 2009 (AGA, 2012). The production over time has however been declining, with 2005 being the top year in both ore grade quality and production rates (AGA, 2005). The Navachab mining complex has recently been taken over by QKR Corporation, which will take over the production site soon and is stated to be primarily chosen because of its ‘credible corporate governance capabilities’ (Seccombe, 2014), however the large investment sums will also have undoubtedly played a big role. While AngloGold Ashanti has been the main company involved within the Namibian gold production industry, smaller players such as Epangelo Mining Company (with the government of Namibia as sole shareholder) (Epangelo, 2014) and Etruscan Resources (Etruscan, 2014) have also been somewhat influential, yet are negligible in terms of Namibian market share.

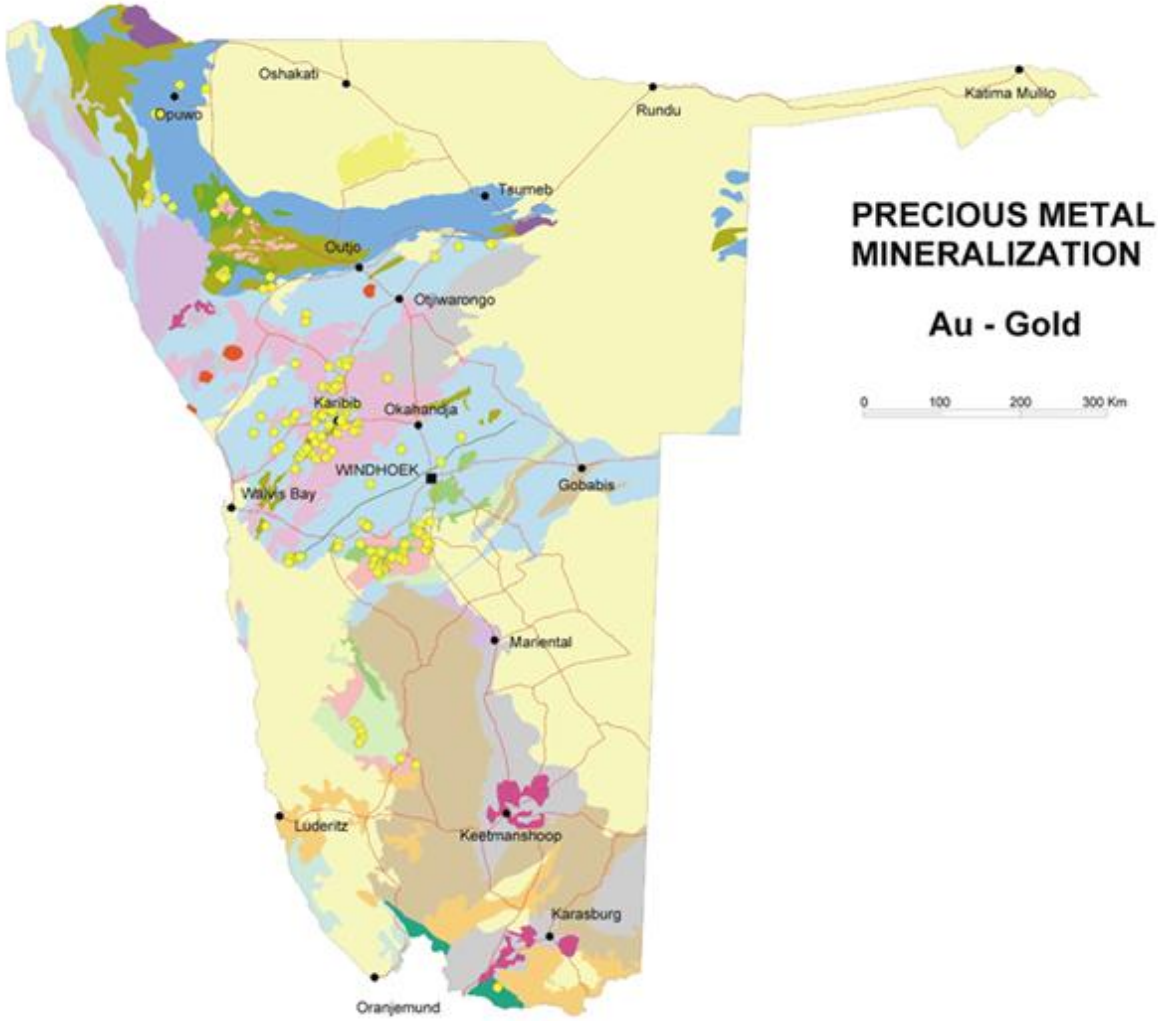


Figure 22. Gold mining sites in Namibia, adapted from MME (2013b)

For the platinum industry, Namibia is not a very actively involved country. Active companies include Ongopolo Mining and AngloAmerican Platinum, be it in a very minor way. However, the production of platinum in the country is almost negligible and much information about the Namibian-based activities of AngloAmerican Platinum is lacking (APL, 2013). Research by Baturin & Dubinchuck (2006) has however indicated the possibility of platinum extraction from oceanic reserves. Furthermore, the Tsumeb mine in the northern Oshikoto-region has some platinum reserves along with a range of other rare earth metals (Mobbs, 2004; MME, 2014). Nevertheless, no records or maps about the platinum or PGM-based mining activities could unfortunately be obtained. As the platinum mining industry in Namibia is of no great significance in general, especially as compared to the PGM-related

mining activities in the neighboring country of South Africa (Mudd, 2010; Hamann, 2004; Ololade & Annegarn, 2013). While information of the Namibia-specific mining activities of the PGM-mining companies is largely lacking in terms of published information, we will use the general accounts of the AngloAmerican Platinum CSR-activities for the further analysis in the context of voluntary sustainability initiatives.

8.1.3. Governance and state-firm interactions

The Namibian diamond industry is controlled by NamDeb Diamond Company Ltd., which is a shared ownership between the De Beers Group (50%) and the Namibian government (50%) (WDC, 2008). The shared ownership between African governments and companies owned by the De Beers Group is a policy resulting from De Beers' corporate social responsibility policy (Claasen & Roloff, 2012). However, for Namibia in particular, the shared ownership can also be explained by the intended nationalization of the mines by the Namibian government (Ibid.). The cooperation between the two shareholders requires a lot of business-state interactions, thereby strengthening the public-private partnership structures within the Namibian diamond industry. Kempton & Du Preez (1997) argue that state-firm interactions are becoming more important within the international relations-context. The good relations between De Beers and the Namibian government allowed for the creation of more effective legislation and economic position, while providing De Beers with increased bargaining power and thereby a better competitive position within the diamond mining market (Ibid.). The fact that international corporations partake in equal partnerships with national governments is an interesting feature that would presumably occur earlier in resource-dependent nations than in other countries, since the national well-being of the nation is a stake when it comes to diamond mining in Namibia, it makes sense for the national government to get involved in this sector and attain wealth from it. This is more visible within the diamond-sector, since this is a primary export commodity for Namibia: the state-business interaction occur less regularly in other precious mineral commodities. Only Epangelo Mining Company in the gold sector is a state-controlled corporation, which would basically be the De Beers-case in extreme forms: 100% state-owned operations. However, because the gold mining industry is less important for the economic well-being of the nation, the effects of such ownerships are less influential.

Next to the large industry players are a multitude of artisanal and small-scale mining (ASM) companies, groups and individuals trying to make a living out of the precious mineral production. With around two thousand miners actively involved in the Namibian artisanal mining sector (Ross, 2011), relative to other sub-Saharan nations the sector is actually quite small (e.g. a country such as Ghana has many thousands of involved companies). Blackmore et al. (2013) describe how the standards and certification schemes can also be highly relevant within the ASM-mining sector. The empowerment of smaller mining companies in the context of sustainable development allows for greater differentiation within the mining industry in the long run, as well as providing better working conditions and a decreased amount of externality effects, which positively impact local Namibian communities.

8.2. Interacting with the global market: the position of Namibia

This section will uncover some of the essential features of the precious mineral mining industry of Namibia in the context of other regions, including the placement of the industry within the global market(s). Relative to other nations active in the extractive industry, the country of Namibia is certainly within the periphery of economic activities. The neighboring South-Africa is a more prominent core node economy, both in GDP and in precious minerals mining activity (Hamann, 2004). Namibia's strong ties with South African stem from the fact that Namibia has separated from the

nation's 76-year long reign and became its own sovereign nation in the year 1990 (Evans, 1993). The South African economy, also being largely dependent on mineral resources, has seen a much problems but also significant growth in wealth: eventually creating one of the largest economies in the sub-Saharan region (SARW, 2010). Namibia, however has also performed rather well despite its young history. Its wealth has been mainly attained in a period where the newly formed country of Namibia needed their time to create and install newly formed governmental regulations, institutions and organizations. The introduction of large mining MNC's such as De Beers (Kempton & Du Preez, 1997) and Rio Tinto (Kapelus, 2002) into the country has created an opportunity to reap benefits from mining-related activities and thereby set up a strong and business-cooperating governmental institutional structure. These international companies have strong management structures and are firmly committed to CSR-business practices, thus allowing for the introduction of self-governance structures as well.

The voluntary initiatives applied by these large MNC's have provided some local power to the companies themselves, mainly through implementation of the highest voluntary standards in sustainable mining in order to circumvent possible state-induced pressure or regulatory enforcement that may arise when such systems would not have been implemented (Ibid.). The commitment of these firms to also become inclined with the well-being of the local communities did influence the Namibian population for the better, as Kapelus (Ibid.) describes in his account of Rio Tinto's effort to get involved in local community development. Critical accounts within the case of the Namibian community involvement say that the MNC's main motivation for these involvements is to reduce costs of local lawsuits, or potential strikes from local employees, while at the same time reducing pressure from local NGO's (Ibid.). However, while the MNC's environmental impacts have been minimal because of their CSR-commitment, their community involvement has in fact been positive, as is confirmed by several case-studies performed by Kapelus (Ibid.). Involving local communities in international mining activities by large MNC's allows for decreased unfair competition with the (already rather small) ASM-community in Namibia. Contracting local companies allows for a local economic contribution and decrease in the potential for local conflicts, which has been highly favorable for the average well-being of the local Namibian communities generally (Ibid.).

8.3. Voluntary market standards and the governance of Namibian mining

8.3.1. Self-governance in the Namibian precious minerals industry

The business implementation of CSR-practices in the mining companies of the Namibian precious mineral industry are quickly becoming the international norm and are increasingly important as a central business management principle (Jenkins, 2004; Littlewood, 2014). A wide range of standards is currently applied in practice by some of the larger mining companies that are active in the precious minerals industry of Namibia. Table 15 provides an overview of the most important standards which are used by the biggest companies operating in the Namibian region for gold, platinum and diamonds. The particular roles of international mining companies in a national context are influencing the proliferation and co-evolution of the adoption of sustainable standards (Manning et al., 2012). The stakeholders which are active in the national context matter for the further development and effective implementation of the voluntary sustainability standards. The country of Namibia has seen some favorable conditions in which this adoption has taken place: the economic contribution of mining has caused the Namibian government to partner with large MNC's and thereby allowing them to roll out their CSR-based self-governance regulations within the Namibian context (Lange, 2003). Whereas previously the 'Western' mining companies have been notorious for their bad environmental and social influence, the implementation of standards is likely to provide them with an opportunity to circumvent the Namibian regulatory influence that is government-induced (Kapelus, 2002).

Precious mineral commodity	Mining company	Standard applied	Source
Gold	<i>AngloGold Ashanti</i>	GRI	AGA, 2014
		Global Compact	
		ICMM	
		EITI	AGA, 2012b
		ISO 14000	
Platinum	<i>AngloAmerican Platinum Ltd.</i>	GRI	APL, 2013
		UN Guiding Principles on Business and Human Rights	
		ICMM Principles	
		ILO Standard	
		ISO 14000	
		EITI	
Diamonds	<i>NamDeb (De Beers)</i>	KPCS	De Beers, 2012
		RJC	
		ISO 14000	
		GRI	
		OHSAS 18001	NamDeb, 2014

Table 15. The Namibian extractive industry main MNC's and the (known) global sustainability standards applied in local, regional or national business practice (divided by relevant precious mineral commodity)

The self-governance practices of the large mining corporations in Namibia thus seem to have a favorable incentive for the businesses themselves, yet also the Namibian communities and government are benefited by the CSR-performances and business commitment to sustainability standards. These self-governance structures force the mining companies active within the country to improve their business practices and have a positive or at least a less-negative impact on the local communities and environment (Littlewood, 2014). As has been shown in the market analysis in the first phase of the research, the increased incentive for mining companies to be involved in CSR-business practices also does provide them with a comparative advantage within the market. Allowing businesses to cooperate with governments in shared ownership structures, such as is the case with NamDeb, does create little potential for competitors to penetrate the diamond market in Namibia. Just like has been indicated in the Theory of Change (ToC)-scheme in Figure 5, the certification structures certainly have become a requirement for market access in Namibia, since the governmental agenda is to reduce the negative effects of mining as much as possible, as opposed to De Beers' main goal of providing maximum value for its shareholders. By the government's involvement in large business corporations within the precious minerals mining market in moving towards CSR-based business practices, penetration by other companies in especially the diamond industry has become nearly impossible because of this created structure. On the other side, the companies also do have their own reasons to adopt CSR in their business management structure, since it provides them with an improved competitive advantage in the long run. Littlewood (Ibid.) refers to such situations as 'win-win', where all stakeholders involved benefit from the agreements made and a clear business case can be made. Despite the self-governance influence of this win-win situation on the part of the businesses, the Namibian government remains to have the last say in what regulations will be followed and what is deemed as acceptable business behavior in the practice of mining the abundant natural resources of the Southern-African country.

8.3.2. CSR developments in the national context: influence in management practice

The importance of CSR in mining business practices is becoming increasingly important and central to the corporate management structure of the vast majority of MNC's (Hauschildt, 2008). Also for those companies operational in the Namibian precious mineral mining sector, CSR-based practices are an important element in the business management planning, as well as being firmly rooted in the core business values. The introduction of CSR has however brought great responsibility to the mining companies: adhering to the commitments made is both an organizational and practical problematic endeavor. Not surprisingly, the business practice sometimes shows a gap between the CSR-commitments of the mining companies and their actions and fairness of information about these actions (Hamann & Kapelus, 2004). The African approach to CSR-practices is often of philanthropic nature, with special attention to education, health and local environmental well-being (Forstater et al., 2010). A famous example of CSR-philanthropy within the local Namibian community is the extensive HIV/AIDS-programme with which Anglo American has become known (Brink & Pienaar, 2007). This type of community involvement is of particular importance for a country as Namibia, which has a high rate of HIV/AIDS deaths on average. Generally, the extractive industry seems to favor the use of community involvement for reasons stated before in this report: to reduce the chance of potential lawsuits and possible strikes in the local communities as a response to negative externalities resulting from mining activities. Littlewood (2014) provides a clear analysis of this effect by providing examples of community involvement in Namibia. The CSR-practices by Namibian mining companies in terms of these types of community involvement are mainly performed for instrumental rather than altruistic reasons, yet still benefit all parties involved.

Another issue which is described by Littlewood (Ibid.) about the CSR-efforts of Namibian companies is the local problem of ghost towns. Historically, ghost towns have been abandoned after workers left mining sites and moved to new locations, often in the middle of the Namibian desert. Namibian mining companies now include as part of their transparency-effort a plan of what to do with their mining sites and workforce villages after mining activities are over, in order to prevent more cases of these ghost cities (Ibid.). Many more of such community involvement CSR-efforts can be found for the Namibian case in particular, yet the ghost-town problem is one of the most interesting issues with which mining companies have aimed to improve their community involvement and environmental preservation in the long run.

8.4. The Namibian case: a resource rich country in a global market context

The case-study provided interesting insights into the national application of global sustainability standards for the precious minerals mining sector. The analysis of the market for Namibia in particular has shown how the Namibian economy is highly dependent on the mining activities, especially with regards to the diamond mining sector. This has created some interesting state-firm interactions which have also impacted the CSR-efforts of the companies involved in Namibian mining. Overall, the interactions between the Namibian government and the mining companies have created a win-win situation for the country's economy, local communities and an overall reduction in potential negative externality effects of mining activities. The high degree of community involvement has both benefits for the MNC's involved in the mining practices (since they prevent potential lawsuits and strikes), while at the same time providing a beneficial effect in terms of employment creation, in some cases improved health and well-being and overall a great addition to the national economic situation (i.e. national GDP growth, because of the high resource dependence of the Namibian economy). Overall, the self-governance and sustainability standard introduction has had a positive influence on the Namibian community and economy, even though the companies' motivation for performing CSR remains a questionable one: after all, it is mainly the MNC benefiting from CSR-business practices.

9. Discussion

The analyses made within this research have offered some interesting insights. However, some particular insights on the methodologies applied and the results uncovered are worth reflecting upon. Furthermore, some reflection about the possible implications of the research results, both on a theoretical and policy-level, will also be covered in this discussion-section.

The market analysis of the precious mineral commodities has provided an overview of the core trends and dynamics relevant in the respective industry sectors, primarily within the context of Corporate Social Responsibility (CSR) and long-term problems such as mineral depletion and severe global price fluctuations. While the overview does give an adequate insight into some of the core (potential) issues affecting the industries, several studies indicate that a true market- and CSR-trend analysis entails much more than what could be covered within this thesis (Vogel, 2006; Jenkins & Yakovleva, 2006). Vogel (2006), for example, focuses on detailed demand/supply information as well as related factors of influence. While an attempt has been made to provide some demand/supply relations in the context of mining and minerals, the reality is likely to be much more complex and in order to truly understand market dynamics and trends, if such a thing would be attainable by anyone, would provide more detail and insight into the external factors influencing the market dynamics as well. Furthermore, the literature did not provide much complex insights into the potential threats of the peak minerals-problem, which is likely to shift primary production towards secondary production (i.e. recycling/reuse). The peak minerals-issue is likely to affect the more rare precious minerals earlier than the resources that are more easily obtainable from the earth's crust. The market analysis provided in this thesis is somewhat tailored to the implication that such a problem would eventually occur on the longer term. However, not much studies could underline such potential effects, with the exception of some insights provided by Mason et al. (2011), May et al. (2012), Mudd & Ward (2008) and Richards (2006). The contribution of this thesis towards the 'peak minerals' debate, as a result of the market trends analysis, might certainly be an interesting theoretical addition to the scientific debate.

Furthermore, the analysis of the voluntary sustainability initiatives in the global precious minerals market provides the largest portion of the results data, from which the scoring system might be somewhat open to interpretation. The scoring system can better be explained as a labeling-system, since the numbers provided do not necessarily mean the same in each category. The reference table for this scoring system (Table 9) is only implemented to show which standard performs better in a certain category, rather than that the cumulative scores have a precise meaning other than showing which standard has scored the most points. Therefore, it was chosen that the table summarizing all categories' results (Table 14) does not show cumulative final scores, as they do not have any precise meaning when adding the scores up. The reader of this research thesis must therefore be wary not to assign an absolute value to the numbers of the standard's analysis: they are simply indicators of which standard scores better and the meanings of the scores themselves are provided in both the text and the reference table (Table 9). Nevertheless, the analysis has provided insight into the categories with which most standards have difficulties, and categories which already see adequate performance from most sustainability standards covered. A serious limitation due to a lack of resources is the fact that the data for the analysis itself has solely been based on available publications, mostly first-party data from the standard's websites. This could cause some problems with the validity of the data in that performances might be exaggerated by the standard itself, or that certain categories might have been scored higher or lower due to a lack of verification possibilities. This problem has partially been intercepted by the addition of third-party sources or researches where available, uncovering some

problems with the standards which would otherwise have gone unnoticed. Furthermore, it was very unfortunate that one of the selected standards, the Initiative for Responsible Mining Assurance (IRMA) could not be assessed in its full potential, since this standard is currently in the process of being implemented in practice. Therefore, the final scores for the IRMA might look completely different in a few years, since the full process of practical implementation, as well as the provision of information will only then live up to its full potential. Nevertheless, most categories the IRMA could still score a considerable amount of points, indicating that the standard might indeed be very promising for the future of sustainable mining standards.

The analysis and comparative assessment of the sustainability standards in the precious minerals mining sector aimed to provide a method to assess the good governance-qualities of the currently existing voluntary initiatives applied in practice. For this, several standards were selected and essentially served as example-cases for the assessment methodology: further application of a more refined and detailed version of the assessment methodology applied in this research might provide a systematic quality-based analysis of other standards as well. On a policy-level, the methodology might aid the choice of which standards to support and which to improve, or conversely which standards are so qualitatively lagging behind that it might be better to move to a ‘competing’ sustainability standard. The theoretical contribution of the assessment methodology mainly lies within the fact that the methodological comparison of the good governance-quality assessment might be applied for different standards or different sectors as well (with the needed adaptations, however the groundwork of the assessment categories might indeed be very helpful for similar studies in different industry sectors), further expanding the basis of scientific assessment of sustainability standards throughout the global economy in all industry sectors.

10. Conclusions

This research has shed some light on the movement towards voluntary sustainability standards and certification schemes in the precious minerals mining industry for gold, platinum and diamonds. Dividing the research into three main phases, the first step has been to uncover some of the most essential (sustainability-related) market trends and dynamics and explain the interactions within the respective markets using a supply-demand model. The second phase of the research focused on the story behind the increasing importance of the sustainability standards in the precious minerals industry and their good governance-assessment. By providing a methodology for a systematic assessment of the currently available initiatives in the (global) markets, a quality differentiation could be made between the sustainability standards based on several good governance-categories. Finally, the third phase focused on the Namibian situation in terms of the influence of global standards on a resource-dependent developing country.

The findings for the market analyses have shown that some of the key market trends include the (1) expected increase in global prices of precious minerals due to the increase in demand while possibilities for primary production decrease in the longer term, (2) the long-term problem of peak minerals and its effects on the markets for gold, platinum and diamonds, and (3) the increased importance of CSR-efforts by large multinational corporations in the extractive industry, thereby allowing the CSR-management and initiatives to become increasingly more important in global mining business practice. The trade dynamics of importance include the movement from primary to secondary supply of minerals in the long term (due to decreased availability), as well as the uncertain and highly fluctuating price trends of the recent years. The aftermath of the economic recession has shaken up the market and impacted all three analyzed markets, with gold being the most affected (i.e. prices increased). The diamond market has the potential to lose its price stability due to ALROSA taking over the dominating market position of De Beers, which has always kept prices artificially high. The gold market sees high price fluctuations due to its importance in the financial system. Finally, the platinum market will see a high demand increase (and therefore global price shift) due to its product application in automotive pollution reduction and the accompanying increased strictness of the global environmental air quality-regulations.

The second phase has shown that there is an increasing importance of mining standards over time, with most initiatives being set up by NGO's and partnerships between businesses. The actor interactions between businesses, NGO's, governments and civil society has already created many intricate networks of stakeholders. These networks are actively involved in setting up mining standards and maintaining and managing them to become global institutions for the sustainable improvement of mining practices. While most of the standards entail the adoption of broad guiding principles within business practice, some standards and certification schemes involve a serious set of requirements which must be met when participating in these initiatives. The standards most applicable in the precious minerals mining industry have been selected and subjected to a good governance-analysis mainly based on the ISEAL Code of Practices and several other researches. It has been found that these standards performs generally well within the context of what they pursue, however, some categories of the assessment also see improvement possibilities. Some examples for improvement in the sample of standards assessed include the improvement of providing an adequate and localized auditing system, complaints procedures, as well as setting up a transparent financial justification system and providing a solid budgetary plan.

The Namibian case-study has provided insight into local application of global standards, as well as the CSR-related efforts of companies in the national context. The introduction of sustainability standards in the mining industry has been influential for the resource-dependent nation of Namibia in that it has brought some self-governance power to the large MNC's. However, the Namibian government has also seen some favorable conditions through making shareholder-deals with the large corporations (such as De Beers, Rio Tinto), which allowed them to remain some influence in how these companies operated within their country. The mining companies' strong CSR-based community involvement capacity have allowed for overall increase in the well-being (either financial improvement or reduced externalities impact) of local communities and created a condition in which overall the Namibian country has benefited from the presence of mining MNC's. The small artisanal and small-scale mining sector in Namibia allowed the large MNC's to continue their activities without harming much of the poorer miners within the region. Nevertheless, the extent of information available of CSR-activities in Namibia is currently not very extensive, thus still providing some uncertainty in this respect. Possible future research including fieldwork in Namibia's mining industry sector might shed some additional insight for the Namibian case in particular.

Overall, the results of the research have provided us with some intriguing insights into the workings and influences of the increasingly important market-based sustainability standards in the mining sector. The precious minerals mining sector has seen and most likely will continue to see a transformation of its industry structure due to the increasing importance of the self-governance systems within everyday business practices. With potentially serious market problems ahead, the potential to differentiate your business and partner up in new types of network structures provides an opportunity for survival for much of the large mining companies for decades to come.

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Appendix 1 - Driessen et al. (2012)

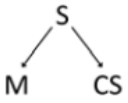
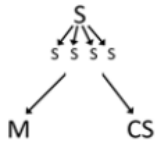



		Centralized governance	Decentralized governance	Public-private governance	Interactive governance	Self-governance
						
Actor features	Initiating actors	Central gov't agencies (or supranational bodies)	Gov't at its various levels of aggregation (subsidiarity)	Central gov't agencies; private sector is granted a preconditioned role also	Multiple actors: gov't, private sector and civil society	Private sector and/or civil society
	Stakeholder position	Stakeholder autonomy determined by principal agency	High likelihood of stakeholder involvement	Autonomy of market stakeholders within predetermined boundaries	Equal roles for all network partners	Self governing entities determine the involvement of other stakeholders
	Policy level	(Supra)national state	Lower levels of gov't	Local to international level	Multiple levels	Local to international level
	Power base	Coercion; authority; legitimacy (democratic representation at the national level)	Coercion; authority; legitimacy (democratic representation at lower levels)	Competitiveness (prices); contracts and legal recourse; legitimacy (agreement on relations and procedures)	Legitimacy (agreement on roles, positions, procedures and process); trust; knowledge	Autonomy; leadership; group size; social capital; legitimacy (agreement on relations and procedures)
Institutional features	Model of representation	Pluralist (popular (supra)national election and lobbying)	Pluralist (popular local election and lobbying)	Corporatist (formalized public-private governing arrangements)	Partnership (participatory public-private governing arrangements)	Partnership (participatory private-private governing arrangements)
	Rules of interaction	Formal rules (rule of law; fixed and clear procedures)	Formal rules (rule of law; fixed and clear procedures)	Formal and informal exchange rules	Institutions in its broadest form (formal and informal rules)	Informal rules (norms; culture); self-crafted (non-imposed) formal rules
	Mechanisms of social interaction	Top down; command and control	Sub-national governments decide autonomously about collaborations within top-down determined boundaries	Private actors decide autonomously about collaborations determined boundaries	Interactive: social learning, deliberations and negotiations	Bottom up: social learning, deliberations and negotiations
Features concerning content	Goals and targets	Uniform goals and targets	Uniform and level specific goals and targets	Uniform goals; targets actor specific	Tailor-made and integrated goals and targets	Tailor-made goals and targets
	Instruments	Legislation, permits, norms and standards	Public covenants and performance contracts	Incentive based instruments such as taxes and grants; performance contracts	Negotiated agreements; trading mechanisms; covenants; entitlements	Voluntary instruments; private contracts; entitlements; labelling and reporting
	Policy integration	Sectorial (policy sectors and levels separated)	Sectorial (policy sectors separated)	Sectorial (branches and industries separated)	Integrated (policy sectors and policy levels integrated)	Sectorial to integrated (depends on problem framing by communities of interest)
	Policy-science interface	Primacy of generic, expert knowledge	Primacy of generic expert knowledge; room for issue and time-and-place specific knowledge	Dominance of issue and time-and-place specific knowledge; expert and lay (producers and consumers)	Transdisciplinarity: expert and lay knowledge in networks; emphasis on integrated and time-and-place specific knowledge	Dominance of issue and time-and-place specific knowledge: expert and lay (citizens)

Table 1. Modes of (environmental) governance and key features
 → dominant role; ↔ equivalent role; - - - background role;
 S, central state; s, decentralized state; M, market; CS, civil society.

Appendix 2 - Maon et al. (2009)

