



Improving Business Environment: The case of the Mining Industry in Bhutan



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ANTI-CORRUPTION COMMISSION (ACC) BHUTAN

Anti-Corruption Commission is a constitutional body, an oversight agency mandated to the fight against corruption in Bhutan. Established on 31st December 2005, ACC's mission is to eliminate corruption through leading by example, achieving excellence in partnership and mainstreaming anti-corruption strategies in public or private organizations.

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EXECUTIVE SUMMARY

Identified as one of the five jewels of the economy by the Royal Government of Bhutan (RGoB), the mining sector has the potential to be a major driver of the economic development of the country. However, there are concerns that the benefits from mining are not flowing through to the broader society due to different factors such as poor governance, insufficient investments and corruption. Understanding these factors that affect the development of the mining sector properly is a crucial goal of this research. In particular, using multiple research methods, this research focuses on understanding the causes of corruption in the mining industry in Bhutan. A systematic scientific inquiry followed seven steps of research. Both qualitative and quantitative data were collected and analyzed from April to December 2015. Based on this scientific inquiry, a "Corruption Model" has been developed that explains the main causes for potential wrongdoings in the mining sector: multiple monitoring agencies, weak DGM power, weak monitoring, unclear procedures, short term lease and weak data mining. From the analysis of the explanation of corruption, different recommendations are proposed to improve the Business Environment in Bhutan, particularly to reduce corruption. The key research diagnostics were the foundations for the policy recommendations provided in the following table:

Key issues	Recommendation
A. Strategic (Policy) level	1. Establish Mining Strategic Development Plan (MSDP). – High cost and long term.
Weak DGM:	
 Lack of assessment of available mineral resources by DGM Lack of assessment of existing human resources capacity and future needs. Lack of dynamic HRD plan. Weak partnership with relevant stakeholders. Weak assessment regarding strength of the Act, rules and regulation by DGM. Weak loadership 	/ 1
 Weak monitoring by DGM: DGM's conflict of interest as a regulatory body while at the same time facilitator for the production in the mines. Insufficient budget for DGM to implement the programs. Ineffective oversight mechanism and compliance monitoring on policies, rules and regulation. 	 2. Establish independent Mining Regulatory Authority (MRA) – High cost and long term.
Lack of Royalty revision:Weak implementation of royalty guidelines.Lack of royalty revision since 2006.	3. Establish a periodical revision and realization of royalty, mineral rent, license fees and surface rent – High cost and long term.
 Unclear processes: Unclear Dzongkhag Land Lease Committee (DLLC procedures. Unclear public consultation process. Lack of Corporate Social Responsibility (CSR) actions. Lack of monitoring mechanism for the public consultation and CSR actions. Lack of expertise related to mine processing by DLLC and local government. 	 4. Strengthen guideline for effective community involvement (High cost and long term) through: Review DLLC mandates and guideline. Review and implement public consultation guideline. Formulation of mining CSR Strategy and Action guidelines. Strict monitoring of the public consultation process by DGM.

Matrix of Key Recommendations

 Too short a mining lease period: Mining lease period (which is 10 years in Bhutan) is too short. 	5. Increase the mining lease period- High cost and long term.				
 B. Organizational (Operational) Level Unclear roles and responsibilities in the process of mine lease: Unclear roles and responsibilities in each process of mining lease of the different stakeholders involved Lack of clear timing developed by DGM for quality service delivery 	6. Develop simple and clear roles a responsibilities of the agencies involved in t mine lease process and develop service delive standard – Low cost and long term				
 Coordination and communication problems: Weak coordination among the stakeholders. Powerful National Environment Commission (NEC). 	7. Initiate more effective coordination among agencies concerned through meetings and dialogue sessions – Low cost and long term.				
 Limited means for inspectors: Lack of training. Insufficient financial means. Lack of personal computer and internet access at work. Weak interaction and suggestion consideration by the head office. Inspectors away in the field alone – Do It Yourself (DIY) situation. Insufficient supervision and monitoring from the head office. Risk of ineffective monitoring by the inspectors through collusion with mining owners. 	 8. Improve mines monitoring (High cost and long term) through: Capacity building – training Periodical monitoring from the DGM head office. Development and compliance to internal ethical code of conduct. Establish financial disclosure program for inspectors, engineers and mining owners. Ensure adequate infrastructure facilities and financial means to inspectors. Establish system of annual online mining report by mines and annual mining report by DGM. 				
 Limited awareness and knowledge: Limited awareness and knowledge about mining and Environment Protection Act, rules and regulation by the public. Weak coordination with media. 	 9. Initiate Wider advocacy – Low cost and long term: Initiate wider advocacy at Dzongkhag level. Ensure better coordination and consultation for awareness about the land lease rules, Mineral Development Policy and Environment Protection Act with media. Ensure wider participation (schools, public institutions and local government). 				
 Weak data mining at DGM: Lack of information. Lack of access to existing information. No storage of information (databases). Limited use of the available information. Most information on paper format. 	 Develop data mining policy (Low cost and long term) with following specifications: Clear objectives of the information system. Information system design (digitization, security and storage capacity). Data procedure specification (right of users, access and maintenance). Information gathering process. Data analysis process (exploration and decision). System improvement (continuing education). 				

1. INTRODUCTION

Despite being a small sized country, Bhutan is recognized worldwide for some unique characteristics. First, the inspiring and farsighted leadership of its successive monarchs led the kingdom this far. Over the last 30 years, Bhutan achieved remarkable development in health and education, foreign relations and economy, and more. Among others, His Majesty, the Fourth King Jigme Singye Wangchuck relinquished his power and transitioned the country to a Democratic Constitutional Monarchy. Secondly, Bhutan is a Himalayan nation, 7000 meters above sea level, sandwiched between the two powerful Asian giants of China in the North and India to the South. Thirdly, the spiritual roots of Vajrayana Buddhism largely influence the national culture. The Buddhism, practiced in the country today is vibrant and infuses nearly every facet of the Bhutanese lifestyle. The people are guided by the values of compassion, kindness and collaboration. Fourthly, Bhutan is also the pioneer in the alternative development thinking based on the concept of Gross National Happiness (GNH). GNH emphasizes a balance between the spiritual and material development of its citizens. Thus, the objective of the country's growth is to have sustained development.

As a result, the country seeks to develop further with clear sustainable strategies. Within the different economic sectors of Bhutan, the mining sector has been the subject of intense scrutiny. In principle, mining is non-renewable source of income for the economy. The current extraction of dolomite, limestone, coal etc. are non-renewable and therefore the overall population has the responsibility to manage the mining sector with due consideration for the future generations. For example, mineral extraction could have environmental consequences that could negatively impact the country and its citizens.

If carried out responsibly and in a sustainable manner, mining could be an important source of revenues that is necessary for a country like Bhutan. With the potential for substantial revenue generation, mining is a priority for the sustainable development of Bhutan. However, as any extractive industry, mining is constrained by its business environment such as corruption that could increase several costs thereby affecting the country (environmental, social, cultural, livelihood) and at the same time decrease the national income for the country.

Indeed, fighting against corruption is a priority for Bhutan and the country adopted a zero tolerance policy. Therefore, the establishment of the Anti-Corruption Commission (ACC) was decreed by His Majesty the Fourth King on 31st December 2005 with a command (ACC, 2014).

"The Anti-Corruption Commission must fulfil its responsibility of curbing and rooting out corruption through timely and effective checking on private utilization of public funds and persons engaged in unauthorized use of public resources. Towards this end, the Chairperson of the Anti-Corruption Commission is authorized to carry out investigations on any person in Bhutan, regardless of status of position, in the course of discharging her important responsibilities"

Further, His Majesty King Jigme Khesar Namgyel Wangchuck gave a clear roadmap to the people to refuse corruption (ACC, 2014). Thus, He states:

"The rise in corruption in Bhutan is a challenge we face. How big the challenge is depends on how soon and how strongly we decide to oppose it. There is no room for corruption. It is as simple as that, not now and not in the future".

ACC was established as per the Constitution of the Kingdom of Bhutan. It states, "There shall be an Anti-Corruption Commission, headed by a Chairperson and comprising two members, which shall be an independent authority and shall take necessary steps to prevent and combat corruption in the Kingdom" (The Constitution of the Kingdom of Bhutan, 2008, Article 27, Section 1).

As the leading agency in fighting corruption, ACC, in collaboration with the Royal Institute of Management (RIM) decided to carry out research with the main research question: Is the mining industry subject to corruption?

To answer this question, data collection and analysis were done from April 2015 to December 2015 by the team of researchers. The research methods deployed were both qualitative and quantitative. The research design involved seven systematic steps, where different analytical techniques were used. This research report is thus the final output of a clearly framed scientific inquiry. The key findings from this research is that the mining industry is subject to some corruption due to weak institution, weak monitoring, unclear and complex procedures, and weak data mining.

The following section focuses on the description of the context of the mining industry in Bhutan. After that, the main data collection methods will be presented in section 3, followed by the illustrations of corruption in the mining sector by describing two real cases in section 4. Section 5 will present largely the diagnostics from the data collection and several different analysis. Based on the diagnosis, various recommendations corresponding to each element of the previous diagnosis in section 6 will be proposed followed by the conclusion in section 7.

2. RESEARCH CONTEXT AND RESEARCH QUESTION

In this section, main features of the context will be presented particularly the description of corruption challenges of the mining and quarrying sector in Bhutan.

2.1 Corruption challenges

Bhutan is predominantly a Buddhist country guided by a unique development philosophy of GNH that emphasizes a balance between the spiritual and the material development of its citizens. Ethics and integrity are strong cultural traits of the Bhutanese society. In accordance with these unique characteristics, Bhutan has adopted a zero tolerance to corruption. To achieve this noble aim, the Fourth King established ACC by royal decree in December 2005.

ACC is guided by its vision: *to strive towards building a happy, harmonious and corruption free society* with its mission: *to eliminate corruption through leading by example, achieving excellence in partnerships, and mainstreaming anti-corruption strategies/measures in public/private organizations*. The main objective is *to continue to ensure low-level corruption in the country*. To achieve its goals and objectives, the Anti-Corruption Act of Bhutan 2011 provides the legal and regulatory framework (ACC, 2011). The National Integrity and Anti-Corruption Strategy (2014-2018) operationalises the policy of "Zero Tolerance" to corruption. Related rules implemented by ACC are Gift Rules 2009, the Debarment Rules 2008 and Asset Declaration Rule 2012. As of December 2015, ACC had 78 employees working toward fulfilling its mandates.

Parliament of Bhutan has ratified the UN Convention Against Corruption (UNCAC) on 12th December 2015 in its 6th Session of the Second Parliament (NAB, 2016). Bhutan has made impressive achievement in anticorruption over the years. Bhutan ranked 27th on Transparency International 2015 Corruption Perception Index (CPI), an extremely high achievement compared to its neighbouring countries of India (76th), China (83rd), Nepal (130th) and Bangladesh (139th). In comparison to 2014 ranking, Bhutan has jumped three places in CPI ranking. Moreover, the National Integrity Assessment (NIA) Survey 2012 reported a score of 8.37 on a scale of 0 to 10 (0=highly corrupt; 10=highly transparent).

Domestically anti-corruption is a major challenge given the policy of zero tolerance to corruption. This is further emphasized by the ambitious 11th Five Year Plan (FYP) target to achieve CPI ranking of at least 20th for Bhutan (GNHC, 2013, p. 120).

2.2 Mining and Quarrying in Bhutan

Every Bhutanese has the responsibility to take care of the natural resources as stipulated in the Constitution of the Kingdom of Bhutan. "Every Bhutanese is a trustee of the Kingdom's natural resources and environment for the benefit of the present and future generations and it is the fundamental duty of every citizen to contribute to the protection of the natural environment, conservation of the rich biodiversity of Bhutan and prevention of all forms of ecological degradation including noise, visual and physical pollution through the adoption and support of environment friendly practices and policies" (The Constitution of the Kingdom of Bhutan, 2008, Article 5, Section 1).

As a common resource, there are concerns on the equal use and equal distribution of the benefits from the resources. Mineral resources are also non-renewable and so the sustainable use, development and management of mines and quarries are vital. While there is even a policy debate about nationalisation of the mining industry, a State Mining Corporation under Druk Holding and Investments (DHI) has been established in the meantime.

The mining of mineral resources is environmentally and socially very sensitive and must be carried out prudently in the larger interest of the country. The draft Mineral Development Policy (2015) guides the mineral development by clearly outlining the roles and responsibilities of the agencies concerned and the leaseholders towards environmentally and socially responsible mining in line with international good practices. This policy emphasizes the need for a properly planned, efficiently regulated and professionally managed mining and its related activities through institutionalization and development of the sector.

DGM under MoEA is the main organization responsible for administration and management of the mineral resources in Bhutan. It was established in April 1981. Today, the department has four divisions mandated to regulate and manage geo-scientific investigations and mining activities in the country. The department's mission is to facilitate efficient, responsible and sustainable development of the mineral resources that contribute to the socio-economic development of the nation.

As of 2015, there were 48 active mines and quarries currently under operation in Bhutan. While 26 were stone quarries, 22 were mineral mines located in different parts of the country. Minerals found in Bhutan are limestone, talc, gypsum, quartzite, granite, marble, dolomite, gypsum, coal, and iron ore. Current active mines and quarries are largely concentrated in western Bhutan (42%) with the largest number in Thimphu (7), Wangdue Phodrang (7) and Paro (6). The Southern region has 35% with the maximum in Samtse (11). The eastern region has 19% with the highest number in Pema Gatshel (6).

Figure 1 shows the growth in the number of mines and quarries over the years along with the number of closed mines and quarries. From 1975 to 2015, 163 mines and quarries have been leased out while 102 of them were closed since 1995. The closure of mines and quarries began after fifteen years of the starting of the mines/quarries in 1976. The mines and quarries were closed either due to the expiry of the lease, termination of lease agreements, exhaustion of mineral reserve, corruption charges or surrendering of mines and quarries.

Number of lease approved for mines and quarries over the years (1976-2015)								
200 T								
150								_
100							_	_
50								
0	1976-80	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-15
Cumulative	2	5	9	24	48	82	124	163
New Mines/quarries	2	3	4	15	24	34	42	39
Closed Mines/quarries	0	0	0	2	4	12	47	37

Figure 1: Growth in the total number of mines and quarries leased and closed (1976-2015). Source: authors using compiled records of DGM

The mineral and stone production increased over the last five years except for the decline in extraction of quartzite from 111.371 thousand metric tons to 839.07 thousand metric tons in 2014 (NSB, 2015) as shown in Table 1.

Year/mineral production in metric tons	2010	2011	2012	2013	2014
Dolomite	1,210,424	1,082,301	1,499,535	1,740,016	2,040,691
Limestone	614,948	649,591	677,129	1,006,235	1,122,825
Gypsum	344,034	373,520	313,230	351,421	412,022
Coal	87,815	108,904	98,731	77,744	121,891
Quartzite	111,371	95,016	88,631	90,909	83,907
Stone	438,398	1,842,679	1,494,467	3,303,731	3,208,111

Table 1: Mineral production over the last 5 years (metric tons). Source: NSB, National Accounts Statistics 2015, p.10

Mining and quarrying is an important economic sector for Bhutan. It provides inputs for industrial development as well as generates revenue. It is also one of the fastest growing industries of the country. In 2014, the revenue generated from the mining and quarrying sector increased by 20.86% compared to 2013, from Nu. 2793.69 million to Nu. 3376.43 million. The growth rate recorded for the sector was 17.01% in 2014. The share of mining and quarrying to GDP is about 3%. The revenue generated in the form of royalty, mineral rent, license fee and surface rent have also increased (Annexure 1).¹

The legal framework governing the management of mining and quarrying are the Mines and Minerals Management Act (MMMA, 1995), the Mines and Minerals Management Regulation (MMMR, 2002). The Environment Assessment Act (2000), and the National Environment Protection Act (NEPA, 2007) establish the legal basis to regulate environmental standards and promote sustainable development. The Mineral Development Policy (MDP) has been drafted with several revisions since 2009, and updates in 2010, 2013, 2014 and 2015. The Mineral Development Policy remains to be implemented.

Another important feature of the mining industry is its impact on the society. The Mining and quarrying sector is socially and environmentally very sensitive. For example, the Royal Audit Authority (RAA) Report, ACC investigations, and media stories revealed a pattern of illegal actions and activities by some of the mining companies. There have been allegations and cases of leasing malpractice, collusion between mine owners and state officials, illegal mining operations and other wrongdoings. ACC received 20 complaints related to mining industry over the last nine years (2006-2015) with a complaint each year since 2013.

2.3 Research Question

Considering the economic potential of the mining industry, RGoB has accorded clear priority to this sector although it could have several adverse consequences to the Bhutanese society. As described in section 5, the mining industry could imply many costs such as social, environmental and cultural costs. The development of the mines and quarries is also constrained by its business environment. Therefore, ACC in partnership

¹The details of the mining contribution to the economy are further discussed in the section (5) about the Main Findings.

with RIM have decided to conduct a scientific inquiry to improve the business environment of mining and quarrying with a clear on corruption.

The main research question was:

Is the mining industry subject to corruption?

To answer this question, the objectives were to:

- 1. Illustrate corruption in the mining industry using cases;
- 2. Evaluate causes and consequences of corruption; and
- **3.** Provide recommendations to promote the Business Environment in Bhutan, leading to reduction of potential corruption.

To answer this question and to achieve the research objectives, the study followed a scientific research approach and design, which is explained in the next section.

3. DATA COLLECTION METHODS

This section explains the research design adopted in this research along with data collection methods and samples, and data analysis techniques.

3.1 Research Design

The research question guided the research strategy, choices of data collection techniques and data analysis procedures over which the research was undertaken.

Research design is a general plan of how to go about answering the research question. Figure 2 provides an overview of that plan, which followed seven systematic steps. The seven steps were designed to systematically lead the data collection and analysis to answer the research question.



Figure 2: The seven-stage research design

Like any research project, this research had some limitations. The following sequence of the limitation does not necessarily indicate its importance.

First, the scope was limited to the mining sector in Bhutan. It could be interesting to extend the scientific inquiry (with the same research design) to other key economic sectors in Bhutan. Conducting different research projects about corruption in diverse economic sectors will send a clear message within Bhutan and outside about the zero tolerance approach to corruption.

The same research could have also been done in different countries at the same time. However, international comparative research are difficult to build and very expensive.

Second, the research was conducted over a short duration of eight months only. It would be stimulating to replicate the same research after two to three years. This will provide opportunity for the evaluation of the effect of the recommendations of this research in reducing corruption in the mining sector in Bhutan.

Third, the researchers noticed difficulties in the understanding of questions by some respondents. Lack of proficiency in English may have made it difficult for some respondents to clearly describe their in depth point of view. However, the problem was minimised with several tests of the research instrument and multiplication of the respondents.

Fourth, due to a weak research culture in Bhutan, the researchers were constrained by the difficulty of access to reliable data. Some data collection that could be done in few hours in other developing countries took weeks.

Finally, given the sensitive topic of corruption and its structurally hidden nature (Torsello, Venard, 2016), some respondents were reluctant to share their views and knowledge on this sensitive subject. This problem was reduced by building trust with respondents, assuring the interviewees of maintaining strict confidentiality of the interviews and indirect questioning.

3.1.1 Stage 1: Understanding the Mining Framework

The first step in the research process was to understand and develop the mining framework in Bhutan. To do so, a desk review was undertaken to understand the legal and regulatory framework, policy, and management frameworks. Information was also collected from administrative records and documents as well as from organizations such as DGM and ACC to get facts and figures related to corruption in mining. The goals of the research was to answer the questions such as who, what, where, how much and how many cases of corruption were related to mining in Bhutan. This included multiple data collection techniques such as field observation of the mine sites, unstructured and semi-structured interviews with all the relevant stakeholders of mines, and structured surveys for the mine representatives.

Field research was done from April 2015 to December 2015 in different regions of Bhutan by researchers from RIM, DGM and ACC and was guided by Prof. Bertrand Venard (Audencia Business School, France).

3.1.2 Stage 2: Mining Process Description

The second step was to study the mining processes required starting from the application for a mine lease until the approval of the mining lease. It was done mainly through document reviews, supplemented by interviews using semi-structured questionnaires. Documents reviewed were reports, laws, acts, policy documents and other related documents including but not limited to MMMA 1995; MMMR 2002; Audit reports of DGM, ACC investigation reports and other relevant reports such as RAA Report 2014. Documents were carefully reviewed to draw inferences and further information were collected from different sources of informants for triangulation (Yin, 2003).

Flow charts of existing processes with DGM were reviewed and updated versions of the flow charts were designed using the software Vue (Version 2015). The new flow charts were validated by DGM. The research was further complemented by additional information through interviews of the relevant personnel from DGM or other organizations.

Further, a comparative analysis of the mining lease processes in other countries such as India, Australia, New Zealand and USA (Hawai state) and the UK particularly on lease/permit process was also done.

3.1.3 Stage 3: Analysis of Wrongdoing Cases

The third step was to get a deeper understanding of mining cases of corrupt nature. The purpose was to study an existing issue within a real-life context (Yin, 2003, p.2; Meyer 2001, p. 330). Yin (2003) highlights the importance of context, adding that, within a case study, the boundaries between the phenomenon being studied and the context within which it is being studied are not clearly evident. So, the analysis of context was very important in the selection of suitable cases. Eisenhardt and Graebner argued for theory building from such cases (theoretical sampling) and that guided the case selection for this study (2007, p. 27). Case study method was also used to gain a rich understanding of the context and the processes (Yin, 2003; Morris & Wood, 1991). Then corruption cases were summarized to answer the question "How" of the possible corruption in mining in Bhutan. Accordingly, two cases from two chapters of mining cases investigated by ACC related to corruption in mining were selected. The cases were analysed through desk review to illuminate and extend the nature, relationships and logic of the corruption in the industry.

3.1.4 Stage 4: Stakeholder Analysis

The fourth step was to identify the relevant stakeholders and understand their perspectives of the wrongdoings in the mining industry. Semi-structured interview technique was used to get stakeholder perspectives, which also helped to get a deeper understanding of wrongdoings from different stakeholders. Nine different types of stakeholders were identified and a very extensive qualitative inquiry involving 161 interviews was conducted. Observation method was also used in this research to discover and understand the impact of mining to the environment and their surrounding communities. It involved observing, recording, describing and analyzing mine sites during the field visits. Recording of pictures were used for qualitative evaluation of costs of mining to complement the quantitative analysis.

The details of the data collection and sample is provided in section 3. The knowledge and information was further used to develop a corruption model for the mining industry. Stakeholder analysis is considered important for predicting and managing the future (Brugha, Varvasovszky, 2000). Therefore, the study considered how the characteristics of stakeholders such as individuals, groups and organizations, influence decision-making processes.

3.1.5 Stage 5: Cost Benefit Analysis

The fifth step was to evaluate the cost of corruption for the mining industry. Cost benefit analysis is undertaken to evaluate the costs associated with the mining sector in general and the costs of corruption in particular. Survey with structured questionnaire adapted from the World Bank Enterprise Survey was used with the mining CEOs and representatives to collect information. The detail of the data collection technique is explained in the next section.

Further, cost of corruption was estimated using national level data concerning economic wealth, the quality of institutions and corruption. The data for 147 countries worldwide from the World Bank in the year 2014 were collected.

3.1.6 Stage 6: Recommendations

The sixth step was to provide recommendations. The previous five steps allowed to collect data about the business environment of mining industry in Bhutan, particularly on corruption. From this large data collection using different inquiry methods, the diagnostics of the mining situation were built. This was presented to the research committee of this project, including representatives from relevant organizations such as ACC, RIM, CBS and DGM. Data analysis and diagnostics guided the drafting of our recommendations. Recommendations were also sought from other researchers and mining experts and stakeholders through structured and unstructured interviews.

3.1.7 Stage 7: Scientific publication

Finally, the seventh step is the last stage of this research. The purpose is to publish this publication in a recognized scientific journal. Indeed, it is important to disseminate the research results to the scientific community and the general public. In the scientific research about the wrongdoings in the mining industry, several hypothesis using quantitative analytical tools will be tested. Further, analysis and finding will be presented in academic conferences and seminars. Additional data will be collected if necessary.

3.2 Data Collection Techniques: Mixed Method

This section describes the mixed method of quantitative and qualitative data collection techniques. The advantage of using multiple methods is that at an exploratory stage, observation and interviews provide rich information on key issues before using a survey questionnaire to collect descriptive or explanatory data. Factual information was also collected to understand the context of Bhutan, the mining industry and business environment, in particular corruption in this sector. For example, the desk research enabled the researchers to get an insight into the corruption cases in the mining industry.

Sampling techniques were used to reduce the amount of data needed to be collected by considering the subgroup rather than all possible cases or elements. A suitable sampling frame was developed, then a suitable sample size was determined ensuring the sample was representative of the population.

For the stakeholder analysis, purposive sampling was used. The selection of respondents was based on the researcher's judgment that best enable answering the research question. It is a non-probability technique but it was suitable since the population of mines that were particularly informative was very small. Patton's

guide on sample selection was used to find what was useful and credible within the available resources and time especially for the mining CEOs and representatives (2002). The survey questionnaire was administered online to all the DGM inspectors (N=67). There were 45 responses, with the response rate of 67% from mining inspectors. For the survey questionnaire to the mining representatives, simple probability sampling was used. The sampling framework was the list of mines in different parts of Bhutan (N=48). The mining population that need to be interviewed (n=35) considering the confidence level at 95%, margin of error at 2.5% was randomly selected. The active response rate was 67%. More details will be given in the section 3.2.4 about the sample of mining representatives.

3.2.1 Semi-structured Interview

To get an in depth understanding of the business environment in Bhutan, the semi-structured interviews were carried out with the stakeholders of mines. The stakeholders identified are described in Table 2.

Mining Stakeholders	Population (N=38 individuals representing 48 mines)	Sample size (n=35)	Interviewed
Mine Representative	38 (48 mines)	35	22
Mining Inspectors	67	23	18
Dzongkhag Land Lease Committee (DLLC) Chairman	12	12	7
Environment officer	12	12	9
Forest Officer	12	12	9
Land Record Officer	12	12	6
Chief Forest officer	12	12	7
Local leader (Gup)	24	24	20
Local representatives	Unknown	2 (47*2= 94)	63
Total			161

Table 2: Mining Stakeholders sample

For the interview, questions were developed through a systematic and rigorous process. First, the interview guides were developed. The semi-structured interview questions were developed based on a literature review. The interview guides and semi-structured questions were tested and retested for quality with 12 respondents. Then, the interview guides were translated word to word from English to Dzongkha and then translated back to English to control the quality of translation.

Formal letters seeking approval and prior consent for the interview of the stakeholders of mines were sent from RIM signed by the Director General and from ACC signed by the head of the administration. Considerable attention was given to the data collection from the mining companies. For mining CEOs, extra efforts were made to send the letter explaining the purpose of the interview through different modes of printed hard copy, fax, email attachments and phone call to confirm the receipt of the letter and to seek appointment for the interview. Multiple contacts were necessary to meet high-level people, due to tight schedule.

The interviews were tape-recorded, which allowed interviewers to concentrate on questioning and listening to the respondents. Interviews were accurately recorded for re-listening at a later stage. During the interviews, open questions were asked to encourage the interviewees to open up and reply as they wished while probing questions were asked to request a particular focus or direction. Recorded interviews were maintained under complete anonymity and confidentiality, which were later transcribed and translated.

The field interview for the stakeholders namely, mining CEOS or representatives, mining inspectors, Chair of DLLC and members, local leaders and community representatives were conducted from April 2015 to December 2015. Average duration of the interviews was 40 minutes.

161 interviews were conducted which is huge compared to many scientific research, which normally involve 25 to 30 interviews for qualitative data (Creswell, 2007). This large sample was necessary due to the large number of stakeholders relevant to mines.

3.2.2 Qualitative Data Analysis

In order to allow scientific analysis of the qualitative data all interviews were to be transcribed word for word and the transcriptions systematically controlled for quality. First, interviews were listened to. Second, systematic coding was done. Third, thematic analysis of the qualitative materials was performed.

The purpose was to emphasize, examine, and record patterns (or "themes") within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question. Fourth, constant comparison analysis was performed to compare each new evidence to identify similarities and differences with the previous observations. Fifth, triangulation was used for validation of the patterns and observations from different sources and the process was repeated until the saturation.

3.2.3 Structured survey interview

Structured questionnaire survey technique was used for the mining CEOs and representatives. The researchers used the World Bank Business Enterprise Survey questionnaire. However, the questionnaire was adapted to the business environment of Bhutan and the mining sector. Based on a literature review, relevant and internationally tested instruments related to the research question were added. For example, instruments on neutralization of corruption (Collins, et. al 2009); social ties (Casiaro & Lobo, 2008) and managerial ties (Peng & Luo, 2000) were added.

The questionnaire was administered face to face (interviewer-administered questionnaires) to the mines representatives. To allow systematic analysis, all interviews were tape-recorded, word for word transcribed and the transcripts controlled.

3.2.4 Sample of mining representatives

Table 3 shows the population and actual sample for mining representatives. Total population was 38 individuals representing 48 active mines and quarries. The number of individual interviews is lower than

the number of mines since some individuals represent several mines or quarries. A representative sample size of 35 was calculated at p<0.05. However, getting the consent for the interview from the mining CEOs or representatives was very difficult. For example, a mining representative in charge of several mines was completely unreachable despite several attempts to contact by phone calls, text messages and emails. There were also few cases of inability to locate the Mining representatives, inability to contact, refusal to participate and to answer.

However, the sample is representative of the population except for the location. The interviews in the eastern part of Bhutan could not be covered. Neither could the representatives be contacted nor the research duration be extended.

	Mines and Quarries	Population	Actual response	Response rate
True of mines	Minerals	22	12	55
Type of mines	Stones	26	10	38
Turno of looso	Auction	3	1	33
Type of lease	Lease	45	21	47
Draduat tura	Captive	17	7	41
Product type	Non-captive	31	14	45
	East	8	0	0
	West	21	10	48
Location	Central	2	1	50
	South	17	11	65
	Private	41	19	46
Ownership	Public	6	3	50
	State-owned	1	0	0

3.2.5 Sample of DGM inspectors

An online survey questionnaire was also used for mining inspectors to understand their problems and issues in mine inspection and also to evaluate corruption related to government officials. The survey was based on the survey instrument rigorously developed for the parallel project "Transparency and Accountability in HRM processes in the civil service in Bhutan" with the addition of specific questions relevant only to inspectors. Pilot test was carried out on paper format with five interviewees to check on clarity and difficulty, duration of interview and the feedback were taken to improve the instruments. The questionnaire was also tested online with 12 interviewees. Final retest was conducted with seven interviewees.

67 mining inspectors were contacted through emails (**Table 4**). Some inspectors were not reachable due to problems with emails and internet and for them printed copies were sent. The questionnaires collected was 45, out of which 39 completed online and six completed the printed form.

The quantitative data collected were analyzed using XLSTAT 2014.

Mining	inspectors	Population	Sample
Region	West	17	16
	East	14	9
	Central	2	0
	South	34	20
Gender	Male	54	34
	Female	13	11
Age Group	21-30	13	9
	31-40	37	24
	41-50	17	12
Years in Service	0-5	13	8
	6-10 years	24	17
	11-15 years	1	1
	16-20 years	24	16
	21-25 years	2	2
	26-30 years	3	1
Qualification	Grade 8	13	11
	Grade 10	15	13
	Grade 12	38	20
	Graduate	1	1

Table 4: Sample of DGM inspectors

3.2.6 Ethical aspects of research

During this project, researchers maintained strictest integrity. Confidentiality of the information of the respondents was ensured. Only specific transcribers were hired with the undertaking to maintain strict confidentiality of the transcriptions. Due to the sensitive nature of research on corruption, confidence of the respondents needed to be gained. Since ACC was involved in this research, a separate database of respondents was created. Only two researchers had access to this database, with no one from ACC or DGM. The process was monitored so that all respondents of the mining industry were totally anonymous for both ACC and DGM and this research was presented to the mining inspectors as being done independently by RIM.

4. ILLUSTRATIVE CASE STUDIES

The purpose of the case studies in this research was to provide some examples of corruption cases in the mining industries in Bhutan. The idea was to illustrate the types of crime committed through real cases and to identify systemic loopholes. It was examined using ACC's investigation reports. However, confidentiality of the persons involved were maintained by changing all the names although the cases were largely discussed in the media at the time of prosecution.

4.1 Mining Case Study 1: From high position to jail

Mr. Kesang (then Head of Mining Division, DGM) and his sub-ordinate Mr. Sonam (Area Coordinator) along with their relatives were involved in dishonest actions. In 2001, the officials had applied for a talc mine in the name of their relatives despite this being forbidden by law.

After completing his Bachelor's Degree in Mining Engineering, Mr. Kesang joined DGM in 1991. Within 6 years of service, he was promoted to head the Mining Division at the Department of Geology and Mines (DGM). Mr. Kesang had applied for a talc mine at Lower Kethpo village in one of the southern Dzongkhags in the name of his uncle Mr. Dargo. It was found that a man called Druktong has submitted the mining application in the name of Dargo using the letter pad of Pulley Exports. This business entity belonged to Mr. Kesang's father Mr. Drukgyel Druktong and his younger brother Mr. Lama Druktong. The mining application was duly signed as Druktong

However, Dargo had not applied for the mining lease and he was not aware of this entire activity-taking place. Kesang's father Mr. Drukgyel Druktong had no reason to forge the application since he was a private individual (not a civil servant). Therefore, the application was written by Kesang using his father's letter pad and forged as Druktong. In the process, Kesang had misused his position in DGM, forged the signature in the application for the mining lease of Talc mine, impersonated his uncle and perpetrated fraud against the government.

Furthermore, during the time of processing, Kesang misguided his superior at DGM in order to get the mining lease. The mine was operated for a period of six years for two lease periods from 1st June 2003 to 4th June 2009. After the establishment of ACC in 2006, the operation of the mine was investigated and it was found that the Talc Mine in one of the southern Dzongkhag operated under the license name "Tshontruel Mining Enterprise" was in fact operated by Mr. Kesang and Mr. Sonam. At the time of the investigation, Mr. Kesang was transferred to another office. These two officials were found guilty of deceptive practices, forgery, misleading their superior and not following the prescribed set of rules for leasing of mines.

4.2 Mining Case Study 2: Corrupt practices in the Mining Division

In 2007, ACC received a complaint against DGM employees, following which investigation was conducted between June to December 2008. The two principal corrupt officials were Mr. Kesang: the former Head of the Mining Division at DGM and Mr. Sonam: an Area Coordinator. They were investigated and charged for corrupt practices. Mr. Kesang exercised significant power at different levels, from processing to the

approval of the mining lease. Mr. Sonam supervised mining activities at the field level as an Area Cocoordinator. The corruption took place when Mr. Sonam was serving as the Area Coordinator for more than 13 years at the same place without a transfer i.e. in southern Bhutan, where there are lot of mineral reserves with potential for future mineral business. There were at least two mineral export licenses particularly for this case analysis illegally operated by the two principal accused. ACC investigated the case and the Office of Attorney General prosecuted the accused officials.

M/s Darthang Mineral Export

This case illustrates several wrongdoings. Mr. Sonam had forged his cousin Ms. Tshomo's license originally issued to export cash crops. The license was presented as "Darthang export". Mr. Sonam forged the license by inserting the word minerals, which read as "Darthang Minerals Export" (DME). This license was used by Mr. Sonam to export talc and others minerals to India and to make financial transactions. Mr. Sonam had also employed few Indians and his own family members. All the financial transactions and other business correspondences including tax filings, commercials invoices, accounts, agreements and contracts were all done by Mr. Sonam's staff and wherever possible Mr. Sonam refrained from being involved in the daily business conduct.

Mr. Sonam had also opened several fake bank accounts in the name of different individuals including Ms. Tshomo and Mr. Gopa, after approaching them several times. However, the bank transactions including deposits and withdrawals were all done by Mr. Sonam's managers Mr. Duba and Tenzin. The system to detect fake accounts were not prudently exercised by the bank. It is likely that the creation of any fake account was possible by any crooked individual at that time.

In addition, Mr. Sonam was also able to produce a fake letter pad on which he obtained the signature of Ms. Tshomo for the operationalization of fake bank account. This clearly shows there was deceptive practices and forgery by Mr. Sonam.

There were also incidents of concealment of income by the accused in order to evade tax. Mr. Sonam and Mr. Kesang were called by the Regional Revenue and Customs Office (RRCO) southern Bhutan several times to discuss their taxation. However, they never appeared. The two accused officials were involved in numerous dishonest acts for their personal financial gain: starting from abusing official power to forgery, tampering of public records, official misconduct, deceptive practices, tax evasion and collusion.



Figure 3: Nexus of different individuals involved in the mining

Figure 3 depicts the *modus operandi* of how Mr. Sonam succeeded in getting the business license and operating the business through involvement of different individuals directly or indirectly. Being a civil servant, he concealed himself and did not get involved directly in the business activities and instead involved his staff and relatives as the front director. The actual license holder was never present during the inspections conducted by DGM and NEC officials. The actual license holder of Ms. Gartoenla Export was later found to be Mr. Gopa, Sonam's brother. Mr. Gopa only served to conceal his brother, Mr. Sonam, and was only an employee.

There was an incident where Mr. Gopa had attempted to mislead ACC by giving wrong information in trying to protect his brother Mr. Sonam. Mr. Gopa had claimed himself to be the proprietor of the M/s Gartoenla Export and stated that he also operated Yesheyla talc mines² for last three years. This clearly shows that there was aiding and abetting by Mr. Gopa.

Conclusion

The two cases were presented to illustrate what corruption in the mining sector would entail. The fraudsters operated the mine for 6 years without anyone knowing about it until a complaint was lodged with ACC in 2007. They were able to continue their illegal operations in the absence of any control body in Bhutan.

These two cases also point out that there are potential wrong doings in the mining sector in Bhutan. Corruption practices are common in any organization when there is no watchdog. Although the legal framework exists, lack of individual integrity, ineffective monitoring and supervision, absence of check and balance system,

²Yesheyla talc mine is the other related mining case under the same case which could not be elaborated here

inadequate due diligence and unethical leadership in the DGM led to corrupt practices. In the end, court judgements were pronounced for both the accused. Mr. Kesang was sentenced to imprisonment for 7 years, one month and eleven days with restitution of Nu. 43 million to the government. Mr. Sonam was imprisoned for 6 years 8 months and 14 days with restitution of Nu. 48 million. Mr. Gopa was imprisoned for 1 year 2 months and 28 days.

At policy level, the cases show that the establishment of ACC was necessary to reduce corruption in Bhutan. It is also important to stress that corruption could be at high level in the hierarchy of public organizations in Bhutan. This implies that ACC should have sufficient authority to conduct its investigation.

Another implication at policy level is the obvious complexity of corruption cases. In such situations, ACC needs the necessary resources to carry out long and complicated inquiries.

Finally, the two corruption cases highlights that corruption could have important financial consequences.

5. MAIN FINDINGS

This section highlights the key findings of the research. The first sub-section answers the main research question on whether or not the mining industry in Bhutan is subject to corruption by examining the business environment of mining industry in particular and Bhutanese firms in general. The second sub-section provides the evaluation of benefits and costs of the mining sector, followed by the estimation of the costs of corruption in the mining industry by developing a "Corruption Model". This corruption model explains the reasons for corruption in the mining industry in Bhutan. Subsequently, the explanation of each of the factors is provided, which forms the basis of our recommendations.

5.1 Business Environment

In this section, the Business Environment situation in Bhutan in general and in the mining industry is presented. The overall aim of the study was to identify the constraints in the business environment in Bhutan, particularly, the mining sector.

The question asked: Is the mining industry subject to corruption?

To answer this question, the World Bank Business Survey 2015 for Bhutan was used. The World Bank conducted a research in the country in 2015, interviewing executives in 253 firms. However, the World Bank Business Survey did not cover the Mining Industry by sector. Thus, the World Bank Survey Questionnaire was adapted for the mining sector. At the same time, face-to-face interviews with mining representatives were also conducted from July 2015 to November 2015.



Figure 4: Percentage of firms in Bhutan indicating their major obstacles in doing business. The firms answered the following question: Which of the following elements of the business environment, if any, currently represents the biggest obstacle faced by this establishment? (n= 253). Source: World Bank, 2015 Figure 4 shows the percentage of the top ten business constraints faced in Bhutan. Among the top ten business constraints for Bhutanese firms, corruption does not feature in the list. Thus, for the firms in general in Bhutan, corruption is not a major problem. Access to finance and labour regulations are the two major constraints.

However, after analysing the survey data from 22 mining owners and representatives, corruption appears to be a major constraint for the mining industry in Bhutan (Figure 5). Corruption as a constraint to business environment is at the same level as that of access to finance and electrical connection.



Figure 5: Percentage of mines in Bhutan indicating their major obstacles in doing business. The firms answered the following question: which of the following elements of the business environment, if any, currently represents the biggest obstacle faced by this establishment? (n=22)

For the purpose of benchmarking Bhutan with developed countries which are doing well in terms of fighting corruption, most recent data available from the World Bank have been used. While the World Bank surveys have been conducted in different years, the years are close enough and hence comparable.

While 3.9 % of the firms in Bhutan identify corruption as a major constraint (Figure 6), Bhutan is in a much better situation in the region, compared to Pakistan, where 68% of the firms considered corruption as the major constraint (17.5 times more than Bhutan) and in Bangladesh it is 50%, followed by Nepal at 44.7% and India at 36%.



Figure 6: Percentage of firms in different countries identifying corruption as a major constraint. Source: World Bank, 2015

However, with zero tolerance policy for corruption, it is important that Bhutan sets a higher standard in terms of its fight against corruption. Hence, it was considered it beneficial to compare Bhutan with more developed countries, such as Germany, Slovenia, Poland, Czech Republic, and Slovakia (**Figure** 7). Germany is a developed country both in terms of the resources to fight corruption and in terms of the quality of institutions and the foundations of anti-corruption. A clear sign of success of the Anti-Corruption Strategy of Bhutan is that the achievement of Bhutan is similar to many other developed countries. For example, the percentage of firms indicating corruption as the major constraint in doing business is similar between Bhutan and Germany, i.e. 3.9% (**Figure 7**).





To further examine corruption, bribe incidence was analysed. The World Bank Survey measures bribery incidence as the percentage of firms experiencing at least one bribe payment expected or requested across six public transactions dealing with utilities access, permits, licenses, and taxes. In Bhutan, for firms except mining industry, bribe incidence is 3.9% in 2015. This is comparable to a developed country like Croatia (**Figure 8**). Bhutan lies in between Sweden, Poland, and Slovakia.



Figure 8: Percentage of firms in different countries experiencing at least one bribe payment request. Source: World Bank, 2015

If sector specific bribery incidence is considered, the manufacturing industry has 3.4% and service industry has 0.4% (**Figure 9**). Because World Bank Survey does not cover the mining industry, the bribe incidence was calculated from the data.



Figure 9: Bribe incidence: Percentage of firms in Bhutan experiencing at least one bribe payment request. Source: World Bank, 2015

Using the same research instrument as the World Bank, the calculation of the bribe incidence in mining sector in Bhutan in 2015 was undertaken. From the small sample, it was found that 31.82% of the mines have experienced at least one bribe payment request or was at least expected to do so. This figure may not depict the real picture because several factors distort this result. First, the sample though representative, is

small and there are only few cases that reflect high percentage of bribe incidence. Secondly, earlier mining corruption cases illustrated that corrupt leaders managed DGM from 2001 until 2007. With unscrupulous DGM officials leading the sector in the early 2000, the image of mining industries was therefore tainted.

The bribe incidence with 31.82% in the mining industry corresponds to real or potential corruption cases in areas of inspection (three cases), operating license (two cases) and water connection (two cases). After segregating the number of mines operating before and after 2007, there were no more corruption complaints, indicating a "Corruption free" DGM. However, inspection processes were still rife with corruption.



Figure 10: Bribe incidence: Percentage of mine that experienced at least one bribe payment request in the previous year (n=22)

Thus, it shows that if the cases related to the past wrongdoings at DGM are controlled and eliminated, bribe incidence is much lower but still exists at 11.7% (**Figure 11**).



Figure 11: Bribe incidence: Percentage of mines experiencing at least one bribe payment request in the previous years after controlling for the corruption cases until 2007 (n=17)

The qualitative data also points out some other form of corruption such as manipulation of bills by the mining owners. As a mining representative said, *"Especially with regard to government contracts,and I know one of the big competitors 'X' is engaged so, you know sometimes you supply only ten trucks and you actually put up bill for fourteen"*.

Therefore, the business environment analysis shows that mining industry in Bhutan is subject to corruption in the form of bribery. In the next section, the complaints received by ACC against the mining industry is presented.

5.2 Incidence of corruption from complaint analysis

The complaint analysis related to mining will give a clear view of the corruption scenario in the mining industry in Bhutan over the past 10 years from 2006 to 2015. The complaint analysis was carried out based on the updated data generated from the Investigation Management System (IMS), which is updated and evaluated on a weekly basis at ACC. The information is first evaluated by the Complaint Evaluation Committee (CEC) and then reviewed by the Commission for directives.

The focus of the complaint analysis is on mining and its relevant government and private agencies. The complaint received and cases adjudicated against the mining sector is comparatively low in comparison to other sectors such as HRM, land, procurement, construction, etc. The main types of corruption are mainly about the processing and granting of the lease, operation of the mines and the conduct of the officials concerned in the offices and mining sites. Some complaints were investigated and prosecuted.



Figure 12: Corruption Complaints of Mining received by ACC from 2006 to 2015. Source: authors based on IMS generated mining complaints from 2006 to 2015, ACC)

Figure 12 shows the total number of mining complaints received from 2006 to August 2015. The ACC received 20 mining complaints in total over the last 10 years out of the 4,050 complaints received during the same period. The mining complaints received over the past 10 years as compared to overall complaints received by ACC from 2006 – March 2015 is comparatively low, about 0.5%. The highest number of

complaints related to mining was received in 2011 with a single complaint received in 2012, 2014 and 2015 respectively. There was no complaint received in 2008 and 2010. The number of complaints against mining over the years shows a declining trend, which also corroborates with the findings of the complaint analysis against all the sectors (ACC, 2014). This declining trend may be due to fear or lessons learned by other mines from the mining case investigated by ACC in 2008. This may have also alarmed the people on the consequences and ill effects of corruption. This may indicate that there is reduction of corruption in the mining sector.

ACC receives complaints through various modes or channels. 60% of the mining related complaints were received through post, which was predominant over the other modes such as ACC web, Walk-in and Fax with 25%, 10% and 5% respectively (**Annexure 4**). Post is the most convenient way of lodging complaint to ACC. Complaints are made by known or anonymous informants. Out of 20 mining complaints, 75% of the complaints were received anonymously.

In terms of geographical distribution, the highest number of complaints was from Samste with eight complaints followed by Thimphu (five complaints) and Paro (two complaints) (Annexure 6). The categories N/A were those complaints, which were vague and unspecified without clear information about the Dzongkhags (for example illegal extraction of stone quarries). No complaints were received from the other 14 Dzongkhags. The mining complaints against Samste and Thimphu Dzongkhags are the highest since more mines, private businesses and government offices are located in these areas.

Some entities for this research are categorized as semi-government, which means the government has the controlling interests or they are owned by the government. Private mines are those that are fully operated by private mining companies. The auctioned mines correspond to mines that were auctioned by the government for a fixed duration. Government complaints refer to complaints received against government agencies or people working in the government agencies and "others" category refers to complaints that are not specified in terms of agency. Over the past 10 years, ACC received maximum number of complaints against private mining companies (eight complaints) followed by seven complaints against government agencies and its officials (**Annexure 7**).

Private mining companies are also becoming substantially vulnerable to corruption. Corruption involving private mines could correspond to bribery of government officials. This type of collusion between the government officials and the private sector brings harmful effects to the local community and to the country. When government agencies and civil servants receive bribes, they could, in exchange exercise discretionary power and misuse official positions. In some cases, public officials could be active in asking for kickbacks from the mining owners.

Not a single complaint was received against any females (Annexure 8). Out of the 20 mining related complaints, 12 were against males while others were unspecified. This may be indicative of more number of male officials working in the mining industry be it in the private or public sector. It could also be because women are more ethical than men. Transparency International (2000) "A survey of enterprise owners and managers in the Republic of Georgia indicates that firms owned or managed by women pay bribes on

approximately 5% of occasions when coming into contact with a government agency. The percentage is twice as high for firms with a male owner or manager (11%)". Therefore, it may indicate that women in the mining company are less likely to be involved in bribery or abuse official power or in any form of corruption compared to males.

For this research, stakeholders were divided into different categories such as organisation, head of organisation/department and head of the division, mining engineer, mining owner and employees of the mines. The 'others' category (Annexure 9) means the complaints that were received against none of the above mentioned stakeholders. The highest number of complaints was against the head of the division in the government and private mining offices and against mining owners with seven complaints each (Annexure 9).

Most of the complaints received were against the talc mines with four complaints followed by limestone and stone quarry with three and two complaints respectively (Annexure 10). These were only against the mines that are in operation but also includes mines that are illegally processed. More than the mines that are in operations, it refers to the mines that were either suspended or closed due to expiry of the lease as per DGM records and mines that were illegally set up and were later suspended by ACC after investigation. The category 'others' were those complaints that were not related to mines or minerals but against individuals.

Over the past 10 years, the highest number of complaints in mining was on abuse of power (seven complaints) followed by deceptive practices (four complaints) and collusion (three complaints) by government and private officials (Annexure 11). In such cases, government officials and executives in private organizations misuse their power, without the knowledge of the head of their agency / organization. The deceptive practices could also be found rampant in the mining sector. Deception in mining include hiding information, aiding, abetting, deceiving others through false declaration of income and asset and giving false information to mislead someone.

In order to pinpoint the loopholes and flaws in the processes, it is crucial to study the mining lease processes. Deceitful behaviour could appear in the processing and granting of mining lease and also in the conduct of Final Mines Feasibility Study (FMFS), which received 15% of the complaints (Annexure 12). The officials and people involved in the process of issuing environment clearances, operation of mines and export of minerals could exhibit some type of corrupt behaviour.



Figure 13: Action taken by ACC against each complaint between 2006 to 2015. Source: authors from IMS generated mining complaints from 2006 to 2015, ACC

Out of the 20 mining related complaints: six complaints were shared with the relevant agencies for administrative actions; four complaints were closed after proper examination and administrative actions initiated; four complaints were dropped since there were no elements of corruption; and five complaints were investigated by ACC. Out of the five mining complaints investigated by ACC, one complaint after investigation was filed in the court and adjudicated, the details of which have been explained under section 4.

Over the past 10 years, ACC has investigated 142 complaints of the 4,050 total complaints received across all the sectors with mining constituting 3.5% of the investigated complaints.

However, as revealed from the earlier finding, bribery incidence does exist. In addition, other types of corruption such as abuse of power, deceptive practices and collusion in mining sector are also present as highlighted in this Section. Given the policy of zero tolerance to corruption in Bhutan, the existence of any form of corruption is a challenge and concerted efforts are necessary.

Therefore, understanding the cost implications of corruption is of utmost importance. In the next section, cost-benefit analysis of the mining industry is provided to get a better picture of the overall contribution of mining to Bhutan.

5.3 Cost Benefit Analysis

The cost benefit analysis of the mining sector in Bhutan should consider all its environmental, social, cultural and economic impacts. Wherever possible, qualitative and quantitative analysis were done. Qualitative analysis was based on the field observations, and stakeholders' perceptions mainly those of the monitoring agencies and individuals, the local community and the mining owners regarding their CSR. This analysis

helped to assess the risks associated with the mining development, as there are concerns and fear within the communities and the public about the rent seeking behaviour of the mining operators.

There are benefits and costs involved with mining though the intensity varies in size and type. The cost and benefits of mining is relevant and essential for each community but also for the whole country. Therefore, assessment of cost and benefit of mining to the country and the local community in particular were done. However, the definition of community differs from one country to another due to different kinds of the origin of people and settlement. Mining communities could be defined as "…where the population is significantly affected by a nearby mining operation. The community may be associated with the mining venture through direct employment or through environmental, social, economic or other impacts. The community can range in size from a city to a village…Communities vary in the profile and perceptions about mining and needs" (Veiga et al as cited in Jenkins and Obara, (n.d), p.4).

Therefore, in this research it was decided to consider the people living nearby the mines whether migrated or settled who are directly and indirectly affected by the mining. The research considered the socio-economic cost and benefits of the community irrespective of people's origin and settlement.

Benefits: Contribution to GDP

The direct financial contributions from mining are the taxes, royalties and mineral rents collected by the government. Other benefits to the local communities and local economy are through infrastructure development such as roads, schools, and transportation facilities.

Over the last 10 years, the contribution of mining to GDP in Bhutan has been growing at an increasing rate. Between 2005 and 2014, the contribution in million Ngultrum has increased by six times from Nu. 543 million to Nu. 3,376 million. This is an impressive achievement considering that the GDP in current prices increased by 3.3% during the same period.

GDP in (Nu. Millions)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Overall GDP		40,673.5	49,456.6	54,744.3	61,220.6	72,496.6	84,950.0	97,453.0	105,378.4	119,545.8
Mining and	549.8	877 8	890 5	1 252 0	1 392	1 616 90	1 941 70	1 962 00	2 793 70	3 376 40

Table 5: Contribution to GDP from the mining and quarrying sector in Bhutan in current prices (Nu. Million). Source: RMA, Annual Report 2014 to 2015

The highest GDP contribution from mining and quarrying was in 2014 with Nu. 3,376.4 million. which is 2.82% of GDP (Nu. 119,545.8 million). As a result, the contribution of mining and quarrying as a percentage of GDP has nearly doubled between 2005 and 2014 from 1.5 % to 2.82%.

Benefits: Royalties and mineral rents

Royalty is a payment made to the government to compensate for the extraction of the resource. In Bhutan, the Constitution says that all mineral resources of the country belong to the nation. Therefore, the mining companies in the country pay royalties to the government based on the rate established by government. The royalties are
paid in advance based on the value of the mineral/mine-head value. The system of royalty collection from mines differs from one country to another. Annexure 2 shows the comparative royalty rate analysis applied in Bhutan, Western Australia and India. For example, the royalty rate applied in Western Australia is 10% on the mine-head value at the end of the lease period and it ensured that the royalty collected is not less than the 10% of the total value of mineral extracted. In Bhutan, the system of royalty is also based on the sales value of the mineral but different minerals have different percentage contribution from the sales value.

Over the past five years, the royalty revenue generation in Bhutan has been increasing with increasing number of mines coming up in the country. There was about 62% increase in the royalty revenue from 2010 to 2013 (Figure 14). At the end of 2014, it declined slightly due to the increased number of suspended mines and non-operating mines because of financial constraints.



Figure 14: Royalty and mineral rent paid to the government from 2010 to 2014 in million. Source: authors compiled from DGM's records

Over the past five years, from 2010 to 2014, the revenues earned from royalty and mineral rents from each mineral have increased **(Table 6)**. A total of Nu. 834.398 million was received by the government as royalty and mineral rent over the period of 2010 to 2014. On an average, Nu. 166. 88 million was contributed from six different minerals production in Bhutan. Royalties from Dolomite (43.4%), Gypsum (21.5%) and Limestone (20.8%) represents 85.1% of the total royalties and mineral rents received from 2010 to 2014.

	Revenue earned from Royalty and Mineral Rents from 2010 to 2014 (in Nu. million)								
Commodity	2010	2011	2012	2013	2014	Total	%		
Coal	8.065	10.132	8.297	4.562	8.166	39.222			
Dolomite	53.485	53.377	74.709	78.642	101.992	362.204	43.4%		
Limestone	25.764	30.213	26.889	42.613	48.058	173.538	20.8%		
Const. material	0.979	2.809	32.326	3.700	4.122	43.938			
Gypsum	34.665	36.563	32.326	36.460	43.041	183.056	21.5%		
Quartzite	2.048	21.615	2.291	3.383	3.104	32.440			
Total	125.005	154.709	176.839	169.361	208.483	834.398	85.1%		

Table 6: Royalty and mineral rent paid by the mining and quarrying sector in Bhutan from 2010 to 2014 (in Nu.). Source: DGM Database

In India, royalty rate is revised every 5 years. Royalty revenue generation itself has increased from Rs. 44,697.485 million in 2009 - 2010 to Rs. 92,387.874 million in 2012-2013 (Annexure 3). The revision corresponds to an increase of 106.7%.

Benefits: Tax Revenues

Apart from the direct royalties and mineral rents collected for each tonne of mineral and construction material such as sand and stone dispatched from the mine, the miners also file yearly, Corporate Income Tax (CIT) and Business Income Tax (BIT), which is summarized in Figure 15. The tax revenue (Figure 15) depicts the trend of revenue earned from taxation. It shows an increasing trend with decreasing rate over the five years (2009-2013).



Figure 15: Corporate and Business Income Taxes paid to the Government of Bhutan from 2009 to 2013 (in million Nu.). Source: DRC, 2015

Benefits: Employment

Employment generation is another benefit of mining business for the local communities. Mining companies give jobs to the local people including farmers, school dropouts and drivers. It helps local people in terms of ensuring sustainable livelihood and reducing movement of population to other areas in search of work and jobs particularly by the school dropouts and labourers. For this research, the local people who live within 200m- 5km from the mine site were included. The data provided by DGM shows employment generation from the mining industry in Bhutan over the last five years.

In 2015, the operational mining companies employed around 1400 people (**Table 7**). This figure of employment is only for people working in the mines and quarries without considering the people employed in the mineral-based industries like Dungsum Cement Plant, Penden Cement Plant, Ferro-Alloys Industries, Crushing Plants, etc.

Region	No. of People Employed	
Thimphu	242	
Phuentsholing	154	
Samtse	50	
SamdrupJongkhar	418	
Pugli	385	
Wangdue	135	
Gelephu	0	
Total	1386	

Table 7: Employment by mines in seven regions in Bhutan in 2015. Source: DGM Database

Cost of Mining

If the mining industry generates substantial revenues for the government of Bhutan and the local population, this economic sector also has some negative consequences. In this section, the focus will be on the costs of mining in relation to health and well-being, culture, society, economy and the environment. In Bhutan, some mines are located near human settlements. For example, local people nearby Begogang Stone Quarry in Wangdue Phodrang and Tintaley Quartzite Mine in Samtse live as close as 200 meters. With people living close to the mines, the potential negative health and well-being effects could be substantial.

Health and wellbeing cost

There is a mixed feeling among community members when a mining project comes up in their area. Initially, most of the community members welcome a mining project with the hope to improve the local economy. However, the community is also aware that mining could have consequences on their health and well-being.

The major concerns of the community are often about dust and noise pollution from blasting in the mine sites. Open extraction produces dust pollution and the remedial measures to overcome dust particle is weakly implemented. The dust particles mostly remain unsettled during the winter thereby affecting the health of local community as well as the people passing nearby. As a local representative said, "*Mining has really affected in terms of health and hygiene. Due to dust pollution in our community, there is no ending of suffering from the cough and cold, which we never get before. Students who are going to the school through this road from the very early age of 6 or 7 were caught with cough and cold and it has affected their studies".*

For some local people, the dust particles generated from the mining activities have caused sickness such as cough and cold, headache and diarrhoea, which were never there before. Moreover, poor drainage system in the mine site areas could pollute the drinking water and streams and as a consequence could affect the health of the local people.

A local representative reported that, "The people working in the mine and even people walking on the road have been affected by dust particles. I heard people had a hot discussion in the past about increasing number of people suffering from Tuberculosis due to dust pollution. I cannot prove how much it has affected but we cannot deny health effects of mining through emission of dust pollution". With increase in the intensity of mining activity in Bhutan, the effect on health is likely to increase.

Another informant stated, "We wish if people could drive slowly because in winter it becomes very dusty and in summer they splash water on us and if we don't have the dress to change this really make us dirty". The fact remains that, irrespective of the season, problems from dust continues.

Furthermore, the movement of vehicles, machineries and the blasting in the mines site disturb the peace of local communities. The people most affected by the noise pollution would be the ones who have a road constructed through their land. Some of the big mining companies such as Pugli Limestone mine and Chunaikhola Dolomite mine in Samste Dzongkhag implement modern technologies such as water tanker to sprinkle water and drilling machines called Atlas Copco, T- 45 to address these issues. As these machines are environment friendly and more efficient, it helps to reduce the level of dust and noise pollution including vibration. However, it is limited mainly to big mining companies who can afford such modern equipment.

Cultural cost

The assessment of the cultural consequences of the mines is crucial for the local people. While establishing mines, it is necessary to assess and verify cultural aspects of the place and the types of worship by the local people. Local people generally believe that every mountain is the abode of local deities and if destroyed, it will bring disharmony to the community.

For example, some people said that they do not receive as much rain as they used to during the time of paddy cultivation since the establishment of the mines. They believe that their local deities used to give them enough rain. Now the local deities have run away because of the mining disturbances, thus bringing misery to the people. They also said that the sicknesses in the local community, pest and diseases of the crops were the results of the damage to their worshiping place due to a mining. People also reported of damages to some temples and stupas due to the blasting.

While the community considers most of the rocky areas in Bhutan as a sacred place (Nye) or local deity's residence, not all such places qualify or are recognized as a sacred place in the list maintained by Department of Culture (DoC). As a result, processing of mining in such places has given rise to issues. As per rule, DGM seeks the consent of DoC before processing mines and quarries in such areas. However, as the cultural concerns of the community are not considered, sometimes clearance is given by DoC to carry out mining in such places. Such issues create potential conflict between the local communities, miners and the government.

Further, mining degrades the aesthetics of temples and monasteries in the community. This is authenticated through site observation of mines. It was found that some old chortens (*Chorten Dangrim*) and stupas were exposed to dust particles and were left unprotected.

As a community member remarked, "We have one "Chorten Dangrim" near this mine but this is left without conservation and protection from the mining activities by the mine owners. One of the pillars of GNH is preservation of culture but I don't find people are concerned and abide by GNH policy". Local community members are of the opinion that mining has brought more problems than benefits to the community.

Social cost

Mining has also caused displacement of the population. In some cases, they abandoned their home and had to resettle in other areas because of the establishment of mines. For example, local people nearby Bhawanikhola and Uttarey limestone mine were resettled in another place called Sangla. At least at the site, mining owners covered the cost of resettlement and employed most of them in the mine.

As a rule, before the community and the local government grant social clearance, an agreement is drawn between the miners and the community to carry out certain CSR actions in the villages. However, once the mines start, some of the mining companies failed to adhere to the agreement and to fulfil some promises, which is tantamount to deceiving the community. At present in Bhutan, there is no mechanism to check whether the mining companies carry out CSR activities as per the agreement.

The community perspective is that rich and powerful people run most of the mines. If there are issues regarding the operation, the mining companies do not address the problems and the helpless communities are scared to lock horns with rich and powerful companies. Further, the local population seems ill informed about the pros and cons of mining projects during the time of consultation meetings. Thus, most of them feel that the mining companies deceive them.

Mining has also created disharmony and division in the local community with the involvement of influential people who infuse negative views about the mines. This has led to conflicts between the local people and mining owners. There are those against the mining and those who welcome mining in their locality and there are those who benefit and those who do not from such activity.

Economic cost

Economic cost of mining in Bhutan ranges from losing land to mines, damages to agricultural land, contamination/degradation of land through erosion and landslides among others. The mining activities have also led to contamination of ground water and drying up of water sources. During the research interview, people shared that some cultivable lands remain barren because the water source had dried. Paddy cultivation was therefore fully dependent on the rains. No rain means no paddy cultivation, which in turn affects the food security of the local people. Some of the productive lands are lost to mining and in some cases, some local people have the mining road going through their field.

Some houses nearby mines are seen with cracked walls. The community claimed that it is because of the vibration from the blasting thereby and the mining owners had to compensate them after court adjudication. There were at least two cases from two different communities where the local people have referred the issue of cracking of their houses to the court. It has also been found out that because of blasting in the mines, some domestic animals and at least, one man died.

Environmental cost

Bhutan, lying in the Himalayan belt has a fragile ecosystem. The cost of mining to the environment is likely to increase with more mines coming into operation. With more extraction, there could be irreversible damage to the flora and fauna. The environment surrounding the mining area is mostly affected.

The open cast mining practiced in Bhutan involves the removal of vegetation and top soil and that in turn leads to the destruction and disturbances of the eco-system. Too much settlement of dust on the trees has led to the drying up of trees as well as the drying up of water sources. This has also led to extinction of endangered flora and fauna species. The local people stressed that they do not see anymore, wild animals such as tiger and bear, which they used to see before. Mining has also caused destruction to aquatic plants and animals. The chemicals generated from mining pollute the surface water and land. Such land contamination destroys productive grazing and crop lands. There is no monitoring on the chemical effects of mining. The diverse effects of the mining sector in Bhutan, particularly to the local communities were described in this section. Despite the difficulties to provide quantitative value of the costs of mining, the next section will present the cost estimation of corruption in the mining sector.

5.4 Cost of Wrongdoing in the Mining sector

The cost of corruption is recognized as being difficult to calculate for various reasons. Firstly, corruption is by nature a hidden practice and hard to detect. The criminals rarely declare their wrongdoings. Furthermore, the definition of the concept often is a subject of debate. Under the word corruption, authors have grouped bribery, favouritism, nepotism, but also price fixing, collusion, cartels, revolving door, illegal information brokering or tax evasion (For example in Global Compact, 2013, pp. 12-13). With diverse and sometimes divergent definitions of corruption (Torsello, Venard, 2016), it is hard to compare or aggregate data. For example, some researchers consider that corruption always implies the involvement of a public official or civil servant. Others scholars define it without specifying civil servants' involvement. Thirdly, the externalities of corruption. For example, if a bribery case in the mining industry results in the pollution of a river, how would it be possible to precisely give a figure to this environmental consequence? Fourthly, it is necessary to determine which method to use for the calculation of the cost of corruption. With such challenges, the goal of researchers is to estimate cost of corruption rather than to attempt calculating exact and accurate financial value of the cost of corruption.

To evaluate the cost of mining, two estimations were used. The first was based on RAA of the mining industry and the second was based on macroeconomic indicators. The Royal Audit Authority (RAA) in 2014 had provided a comprehensive report of the mining industry. In this report, RAA has estimated the cost of several wrongdoings in relation to the mining industry for the period of 2008 to 2012.

Wrongdoings	Amount loss (2008 – 2012) (Nu. million)	Average loss per year (2008 – 2012) (Nu. million)	Amount Loss / Total mining Contribution to GDP (%)
Non-auction	307.39	61.48	3.76
Non-revision of royalty	10.41	2.08	0.13
Non-collection of Environmental Restoration Bond (ERB)	9.72	1.94	0.12
Non- collection of tax	119.78	23.96	1.47
Party transaction	223.51	44.70	2.74
Total	670.81	134.16	8.22

Table 8: Revenue loss because of wrongdoings in mining sector (Nu. Million). Source: RAA report 2014

RAA estimated Nu. 670.81 million as the total cost of wrongdoings in the mining industry during the period 2008 to 2012 with an average loss per year amounting to Nu. 134 million (**Table 8**). The wrong doings such as non-collection of ERB by the government, which has been estimated to Nu. 1.94 million per year may have contributed to the environmental degradation of the surrounding areas of the mines. If there was effective and efficient implementation of the rules and regulations in the mining sector, the loss could have been avoided and enhanced government revenues.

With the average cost of the wrongdoings estimated at Nu. 134 million per year based on RAA report, it was possible to extrapolate the cost of mining and quarrying for the following year by estimating the loss as a percentage of GDP. The highest amount of loss was Nu. 307.39 million for non-auction of mines, followed by inefficient regulation of party transaction (Nu. 223.51million) and non-collection of taxes on income earned from privately owned vehicles, plant and machineries (Nu.119.78 million) respectively.

Years	GDP (2008- 2012)	2008	2009	2010	2011	2012	2013	2014	Average loss by 2014	Total loss by 2014
Contribution of mining and quarrying to the economy	1632.92	1252	1392	1616.9	1941.7	1962	2793.7	3376.4		
Estimated loss		102.87	114.37	132.85	159.53	161.2	229.53	277.41	168.25	1177.75

Table 9: Total estimated loss, extrapolated over the seven years (2008 to 2014 in million Nu.). Source: author's calculation based on RAA report 2014

Based on GDP contributed by the mining sector, the estimated GDP loss over the five years (2008-2012) is Nu. 670.81million and if it is extrapolated over the years 2013 and 2014, the total estimated loss over seven years (2008-2014) would come around Nu. 1177.75 million with an average loss of about Nu. 168.25 million over the same period. This is a huge amount for a developing country like Bhutan. This money could have contributed towards the construction of schools, hospitals and Basic Health Units, bridges or roads, necessary for the socio-economic development of Bhutan.

5.5 Cost of corruption in the Mining Sector based on Macroeconomic Approach

Despite the difficulties of calculating the cost of corruption, academics have recommended the use of a macroeconomics approach for the calculation. The main principle is to evaluate the impact of corruption on various measures of economic wealth and from this to estimate the financial impact of corruption. This method is based on many previous academic research on corruption. Thus, Mauro was the first to empirically prove the link between an increased corruption and a lower economic development (1995). Considering the damaging effect of corruption, Kaufman and Wei called corruption the "sand-in-the-wheel" in the economy (1999). The "sand-in-the-wheel" school is the group of scholars trying to test the adverse effect of corruption in the economy against a few considering the "grease-in-the-wheel" effect (Leff, 1964). Other academics have replicated his early findings (Ehrlich, Lui, 1999; Tanzi, Davoodi, 2001, Mo, 2001; Aidt, 2009, Venard, 2013). Considering the link between corruption and economic development, international agencies have proposed the same process to estimate the consequences of corruption. For example, the Organisation for Economic Co-operation and Development (OECD),

Asian Development Bank (ADB) or World Bank often evaluates the cost of corruption as a percentage of GDP.

The link between corruption and economic wealth could be explained by at least three key reasons (Venard, 2013). First, corruption could distort the decision of some public officials or persons in power. This leads to an inefficient allocation of resources (Svensson, 2005). Spending money in unnecessary projects is a waste of financial resources and implies a decline of the national wealth. Tanzi and Davoodi proved the link between higher corruption and higher public investment in less productive areas (1997), leading to economic decline. Secondly, in order to benefit from corruption, economic agents might create unnecessary burden to business (Myrdal, 1968; Bardhan, 1997). For example, a customs official could ask an export company for irrelevant documents, to force its manager to pay some bribe. Thirdly, corruption could result in lower private investments, and consequently lower economic development (Mauro, 1995; Wei, 2000; Mo, 2001).



Figure 16: Distribution of countries in function of corruption level with GNI per capita in 2014.Source: authors using World Bank data. Gross National Income (GNI) per capita per year in USD in 2014, Corruption level from 2.5 = very high corruption in the country to -2.5 very low corruption. The dot in red is Bhutan

World Bank has developed an index of corruption called the "control of corruption" index with values between -2.5 (low control) to +2.5 (high control). In this research, the reverse of the control of corruption value developed by the World Bank has been used and this is being called the Corruption level. Thus, higher the corruption indicator in the database, higher the incidences of corruption in the country.

Of course, corruption is not the only reason to explain the economic growth or lack thereof. The quality of institutions is also responsible for a significant part of it (Rose-Ackerman, 1999). Institutions are defined

as "the humanly defined constraints that structure political, economic and social interactions" (North, 1991). The institutional environment or framework is characterized as a set of relevant institutions. Méon and Sekkat (2005) suggested that to test the "sand in the wheel" hypothesis it is necessary to examine the connections between the quality of governance, corruption and economic growth. Indeed, it is clear that higher the quality of the institutions, lower will be corruption (Venard, 2008, 2009a,b). Thus, an important institution in the fight against corruption as also for economic development is the regulations. Having the appropriate laws and enforcing them lead to reduced corruption and higher development.

Considering the link between institutions, corruption and economic wealth, the model used in this research is:

Corruption = $\alpha' + \alpha' 2$ Institutions + μ' and Economic Wealth = $\alpha + \alpha 1$ Corruption + $\alpha 2$ Institutions + μ Where: Economic Wealth is the total national income, the economic activity of a country. Corruption is the importance of perceived corruption in a country, Institutions refer to the quality of the institutions in a country, μ and μ' are error terms.

Scholars (Mauro, 1995; Méon, Sekkat, 2005; Aidt, 2009; Venard, 2013) have already tested this model. Data for about 147 countries worldwide for the year 2014 from the World Bank was collected. The original database was larger with more countries. Due to missing values, some observations, still yielding a very large final sample were suppressed **(Table 10).**

To evaluate the economic wealth, authors have used various measures. For example, some used GDP per capita and others mobilized genuine wealth (Aidt, 2009, 2011; Venard, 2013). In this research, the gross national income per capita (GNI, former GNP) has been used as the proxy for economic richness of each country. GNI could be considered a complete measure of the economic activity, especially for countries receiving important international inflows. World Bank defines GNI as the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Bhutan's GNI, calculated in national currency, was converted to U.S. dollars at official exchange rates for comparisons across economies.

Another challenge for this study was to obtain reliable empirical data for corruption (Bardhan, 1997; Kaufman, 1998). Many scholars use indices that measure corruption by asking respondents to score a country according to the likelihood of civil servants being willing to accept bribes (Mauro, 1995; Aidt, 2009). A commonly used measure of corruption is the corruption indices developed by Transparency International and the World Bank. Despite being subject to criticisms (Andersson et al., 2009), this subjective measure is highly used by corruption specialists (Kaufmann, 2010a, b). In this research, the World Bank index "Control of Corruption" that measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests were used (Kaufmann et al. 2005).

Measuring the quality of the institutions is the next emulation for researchers. The debate about the assessment of institutions is very old with for example Becker and Stigler arguing in the 1970' about the importance to consider law enforcement quality (1974). Following other academic works (among others: Johnson, Kaufmann, Zoido-Lobaton, 1998; Méon, Sekkat, 2005; Aidt, 2009, Venard, 2013), in this research the 'governance indicators' of the World Bank is used. Large amount of literature exist on discussions about the pertinence of such governance measurement (Kaufmann, 2010a & b). Among these, 'Government effectiveness' measures the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The final governance indicator 'rule of law' evaluates the extent to which economic agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, the police, and the courts; this indicator also measures the likelihood of crime and violence. Each indicator is between -2.5 (indicating low rule of law) to +2.5 (indicating high rule of law).

Based on the three indicators, institutional quality was measured in this study using a combination of three governance indicators discussed above. The Partial Least Squares (PLS) structural equation modelling makes it possible to combine them into a single measure of the quality of the institutional framework. The quality of the Institutional framework is considered as a latent variable, built from three different governance indicators.

To test the model, the Structural Equation Modelling technique known as PLS, or Partial Least Squares (Wold, 1982, 1985) was used. PLS is based on an iterative combination of principal component analysis and regression. Structural equation modelling (SEM) is used to test theoretical models with many variables in correlations (Chin, 1998; Hershberger et al. 2003; Tenenhaus et al., 2005). The technique is most useful for explaining and predicting the endogenous latent variables (Ringle, Sarsted, Straub, 2012). An added value of PLS is that assumptions regarding multivariate normality are not required to be made (Hulland, 1999). SEM is especially effective in testing models that include latent constructs that are being measured with multiple indicators, such as the latent variable 'Institutions' in this report. The PLS method has thus been chosen since it allowed to estimate a network of causal relationships, defined according to a theoretical model, linking variables including some latent complex concepts. For example, a latent complex concept is the quality of the institutions, measured by three governance indicators. To perform the PLS analysis, the software XLSTAT (version 2014) was used.

Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Azerbaijan, Bahamas, Bangladesh, Belarus, Belgium, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo, Dem. Rep., Congo Rep., Costa Rica, Cote d'Ivoire, Croatia, Cyprus, Denmark, Dominica, Dominican Republic, Ecuador, Egypt, Arab Rep., El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Korea, Rep., Kosovo, Kyrgyz Republic, Lao PDR, Latvia, Lebanon, Lesotho, Liberia, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, the Netherlands, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Rwanda, Samoa, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, South Africa, South Sudan, Swaziland, Sweden, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbeskistan, Venezuela, Vietnam, Zambia, Zimbawe.

Table 10: List of the 147 countries

Variables	Economic Wealth	Corruption	Government effectiveness	Regulatory quality	Rule of law
Economic Wealth	1.000				
Corruption	-0.765	1.000			
Government effectiveness	0.760	-0.908	1.000		
Regulatory quality	0.696	-0.864	0.919	1.000	
Rule of law	0.772	-0.953	0.951	0.927	1.000

Table 11: Cross-correlations between the variables. P < 0.05. Number of observations = 147

Sample			
Number of observations		147	
Variables	Mean	S.D.	Cross-loadings
Corruption	0.158	0.984	1
Government effectiveness	-0.110	0.964	0.980
Regulatory quality	-0.084	0.963	0.969
Rule of law	-0.129	0.964	0.983
Economic Wealth	12169.116	18343.818	1

Table 12: Description of Variables

R ² =	0.866
t test for the latent variable "institutions" =	-30.591
Path Coefficient (between Institutions and Corruption (H1) =	-0.931
Contribution to $R^2 =$	100%

Table 13: Results of Partial Least Squares Analysis concerning the link between the quality of the institutions and the level of corruption. P < 0.05

*Note: R*² *is a statistical measure that gives the "percent of variance explained" by the model*

R ² =	0.603
t test for the latent variable "institutions" =	2.588
t test for the latent variable "corruption" =	-2.928
Gof =	0.838
Path Coefficient β between Corruption and Economic Wealth =	-0.420
Contribution to R ² of the variable corruption =	53.2%
Path Coefficient β between Institutions and Economic Wealth =	0.371
Contribution to R ² of the variable institutions =	46.8%

Table 14: Results of Partial Least Squares Analysis concerning the link between the quality of the institutions, the level ofcorruption and the economic wealth. P < 0.05

To evaluate the cost of corruption in the mining sector, a three-step process was followed.

First, the adequacy of the measures was controlled by looking at the reliability of the individual measures and the discriminant validity of the constructs (Hulland, 1999). The construct 'Institutions' was built using three indicators. Studying the loadings of the measures on their corresponding construct controlled the reliability of each item. Each item loading of scales measuring the construct 'Institutions' was greater than 0.969 (Carmines, Zeller, 1979; **Table 12).** Construct reliability of 'Institutions' was evaluated using Cronbach's alpha of 0.976 greater than the threshold of 0.77 suggested in the literature and the Dillon-Goldstein's rho, which is 0.985. This indicated a high degree of reliability of individual items. In addition, an exploratory and a Confirmatory Factor Analysis (EFA) was performed across the three items. The high level of convergent validity (well above 50%) confirmed the validity of incorporating all three items into one measure of the quality of the institutions.

Furthermore, a discriminant validity test indicated that the latent dimension labelled "Institutions" shared more variance with its respective indicators than with the two other variables with which it was correlated. Discriminant validity was achieved (Fornell, Larcker, 1981).

Secondly, the quality of structural model was analyzed. Structural equation model evaluation is based on the strength of the indicator loadings, R² values and the significance of the structural path (Chin, 1998).

Cross-correlations of all variables are given in Table 11. The analysis of the cross-correlation matrix provided support for the link between corruption and institutions and economic wealth (p<.05). As Table 11 shows, the various measures of the quality of institutions are negatively and significantly correlated with the level of corruption. The various measures of the institutional framework are also significantly and positively correlated with economic wealth. The level of corruption is negatively and significantly correlated with economic wealth.

The predictive relevance of SEM was also evaluated. For this purpose, a global criterion of goodness of fit (Gof) has been developed (Tennenhaus et al., 2005; Vinzi, 2010). Gof index is a measure for the overall

prediction performance of the model (Vinzi et al., 2010). In the model, the Gof index is to 0.838, which shows a very good prediction performance of model (Table 14).

The results of PLS analysis are shown in Tables 13 and 14. It is clear that the higher the quality of institution, lower is the corruption. Thus, R 2 is very high between the quality of the institutions and the level of corruption at 0.866. This means that more than 86% of the variance of the variable 'Corruption' is explained by the variance of the variable 'Institutions'. The path coefficient is the estimated value for path relationship in the structural model and should be evaluated in terms of sign, magnitude, and significance. The path coefficient is negative (p<0.05) and very high at -0.931. The value for the t test for the latent variable institutions is -30.591, showing the significance. Thus, a higher quality of institutional framework implies a lower level of corruption.

The analysis also showed the influence of the institutional framework and corruption on the level of economic wealth. The R² is 0.603. This means that the level of corruption and the quality of institutions explains more than 60% of variance of the economic wealth. The path coefficient of the quality of institutions is positive at 0.371, with a contribution of 46.8%. The path coefficient of the corruption is negative at -0.420, with a contribution of 53%. The values for the t test for the latent variables 'corruption' and 'institutions' are above the threshold limit of 2, at respectively 2.588 and -2.928, showing the significance of both variables to explain the economic wealth. Thus, the quality of the institutions influences positively on the economic wealth and the level of corruption influences it negatively. Therefore, these results support the "sand-in-the-wheel" perspective.

In the third step, the equation generated by the SEM was used as follows:

Economic Wealth = $\alpha + \alpha 1$ Corruption + $\alpha 2$ Institutions + μ :

The above equation was based on previous theoretical literature review, which led to production of coefficients.

This equation allowed the economic wealth to be calculated while taking into account for each observation (in this case, country) the scores of the latent variables. Thus, scores for the latent variables institutions and corruption for all countries were generated. Then a change of the corruption latent scores considering various hypotheses was simulated. Thus, knowing α , $\alpha 1$, $\alpha 2$, μ and the latent scores of institutions, any change in the latent score of corruption for Bhutan in turn predicted the impact on the economic wealth.

The results of the simulation were as follows:

If Bhutan had the same control of corruption as Hong Kong, the structural equation model predicts an increase of GNI per capita of 12.4%. If Bhutan had the same control of corruption as Japan or UK, the structural equation model predicts an increase of GNI per capita of 15.4%. Having the same control of corruption as Denmark, the structural equation model predicts an increase of GNI per capita in Bhutan of 33.14%. The reduction of corruption to the level of Australia will result in a GNI per capita increase of 20.08% for Bhutan. It is important to note that reducing corruption to the level of Australia (according to the World Bank estimates) is equivalent to corruption reduction of 50%. Doing macroeconomic research,

Lambsdorff also showed that a decrease of 60% of corruption level (in his sample) increases GDP per capita by 20% (2003).

USA as a benchmark was also integrated since Bhutan aims to be in the top 20 countries in the fight against corruption by 2020. According to the World Bank estimations, USA has a better control of corruption than Bhutan and thus, achieving the level of control of corruption as that of USA is a reasonable target for Bhutan. If Bhutan had the same control of corruption as USA, the structural equation model predicts an increase of GNI per capita of 1.67%.

Based on these estimations, the hypothesis that the decrease in corruption should have a similar effect on growth of all economic sectors was made. The fact that the mining industry and in general extractive industries are often evaluated as very corrupted sectors implies that this hypothesis could certainly be accepted. With the previous estimations, it was possible to calculate the effect of the change in control of corruption on the contribution of the mining sector to the economy of Bhutan.

According to the Royal Monetary Authority of Bhutan, the contribution of the Mining and Quarrying to the economy of Bhutan was Nu. 3376.4 million in 2014.

Thus, if Bhutan had the same control of corruption as Hong Kong, SEM predicts an increase in the contribution of the Mining and Quarrying sector of Nu. 418.2 million per year. Similarly, if Bhutan had the same control of corruption as Japan or UK, SEM predicts an increase in the contribution of the Mining and Quarrying sector of Nu. 519.9 million per year and an increase of Nu. 1118.9 million per year if Bhutan had the same control of corruption as Denmark. With the same level of corruption as Australia, the contribution of mining is predicted to increase to Nu. 678.2 million (Table 15).

Level of control of corruption	Potential Economic Wealth Gain in %	Increase in revenues in the Mining and Quarrying Sector in Nu. million per year
Denmark	33.14	1118.9
Australia	20,08	678.2
Japan or UK(1)	15.39	519.9
Hong Kong	12.38	418.2
USA	1.67	56.5

Table 15: Results of the SEM simulation to evaluate the cost of corruption

Note (1): According to the Word Bank index, Japan and the UK had the same level of control of corruption in 2014

Finally, if Bhutan had the same control of corruption as USA, SEM predicts an increase in the contribution of the Mining and Quarrying sector of Nu. 56.5 million per year. Based on this conservative estimate but also a reasonable target, the evaluation of the cost of corruption in Mining and Quarrying is therefore Nu. 56 million per year. This is important financial value for the country and should spur on the fight against corruption. As it is clear that corruption leads to lower GNI per capita, the fight against corruption in any

economic sector, such as in the mining industry will lead to higher GNI per capita and therefore, greater wellbeing for the Bhutanese.

Against this backdrop, the main causes of corruption are highlighted in the next section.

5.6 Causes of Corruption

The previous estimations of the cost of corruption show that corruption in the mining industry should be taken seriously. Therefore, the obvious next step in this research was to understand the causes of corruption. The mining corruption model summarizes the field research (Figure 17). The figure highlights the main reasons for this crime and the inter-dependence between the different factors. The "dependent variable" of the corruption model is the potential opportunity for wrongdoings in the mining industry. In the following section, each cause will be developed that will be the foundation of the recommendations.



Figure 17: Corruption model showing the main causes for potential wrong doings

5.6.1 Multiple Stakeholders/Agency in lease process and monitoring

The mining industry is monitored by multiple agencies such as DGM, National Environment Commission (NEC), Department of Forest and Park Services (DoFPS), DLLC, each with different mandates **(Table 16)**. When different agencies are involved, the processes become lengthy, complex and monitoring becomes difficult. De Soto (1990) in anthropological research has shown that longer the process, higher is the likelihood of corruption.

Table 16 shows different stakeholders involved in the process of the mine lease approval and their responsibilities.

Stakeholder	Responsibility in the Lease Process	Responsibility of Monitoring
DGM	Lead agency for processing the mining application	Day to day monitoring of the mining/quarrying activities in the field
DLLC	Process for sectoral and land clearance	- unclear -
Department of Local Governance (DLG)	Process for social clearance	- unclear -
National Land Commission (NLC)	Endorsement and approval of DLLC report and granting of Land Lease Certificate	- unclear -
DoFPS	Processing for Forestry Clearance	- unclear -
NEC	Processing for Environmental Clearance	Once/twice a year.EC clearance every 6months to 2 years.
Department of Labour (DoL)	Ensuring health and safety at work place	Monitoring of the OHSC aspects of the worker

Table 16: Multiple agencies and their roles

On the one hand, the complex nexus of agencies with potentially weak coordination creates misunderstandings and conflicts among the agencies concerned. Several respondents pointed out that there was weak coordination among the different monitoring agencies. DGM and NEC hardly meet to discuss the issues and challenges faced by their agencies. This lack of communication creates misunderstanding. On the other hand, mining owners feel that the monitoring agencies create many difficulties for the miners rather than just giving advice and helping them on mining related issues. The mining companies raised concerns of having to fulfil the requirements of different agencies during mine lease process and operations, which created confusion and unnecessary delays, as well as undue pressure at times. Such a complex nexus of working culture in the mining sector could invariably generate problems. There are also cases of inconsistencies and misinterpretations in the rules and regulations among the agencies. It is important to note that there is no clear service delivery standard/turnaround time instituted or implemented in each agency. Looking at the mining processes in other countries, it appears that government agencies there have a predetermined timeframe for the lease process. Without a clear service delivery standard, mine lease service in Bhutan is likely to be delayed and quality of service delivery will be affected. The incidence of abuse of power and favoritism in granting mine lease license is also likely to increase without clear service delivery standards. Further, with inefficient bureaucratic procedures, facilitation payments could become common.

There are many agencies involved with some power over monitoring. This decreases the influence of DGM, the key mining authority. For example, among the agencies, NEC seems to have more power on the decisions related to mine closure than DGM. This is the partly the result of the authority of NEC to issue the environmental clearance for a limited period of time ranging from six months to two years for the mines **(Table 17).**

Involvement	DGM	NEC
1. Standard requirement of technical report	Low	High
2. Amount penalized for any wrongdoings in the mine	Low	High
3. Non routine visits	Routine	Surprise visits
4. Frequency of visits to the mine	High	Very Low
5.Validity of the Clearance or lease	More and definite	Less and subjected to renewal

Table 17: Characteristics of the relationship between DGM / NEC and the Mines

Concerning monitoring, some of the respondents shared their concerns as well the need for stronger monitoring and inspection by the authority concerned. In principle, it is the responsibility of mining owners, Dzongkhag, DGM, NEC, local authority and local community to come together to ensure proper management of the mining industry in the country. In practice, it has been no one's responsibility since the nature of the working culture has been like a blame game. The DGM should take the lead role and must ensure effective monitoring of the mining related activities, given its mandate. However, it is also the responsibility of the local authorities and community to question if the mining is not carried out in a scientific manner. The mining working culture should improve with the development of clear working processes among the agencies. To ensure responsible mining, it is the responsibility of all the agencies including local communities to keep check and balance in the management of the mining activity.

5.6.2 Weak Institution

Insufficient Budget:

A key element in conducting effective monitoring is to have sufficient resources. However, the allocated budget for DGM is insufficient for the department to undertake activities such as building the capacity of the employees, carrying out effective monitoring, development of facilities and management of mines and minerals in the country.

Adequate budget is required from the government for travel needs of the monitoring team, procurement of computers, accessories and furniture for the inspectors. Budget is also required for procurement of vehicles solely for monitoring purpose in the field. If there is no budget, engineers and inspectors cannot travel to the mine site for day-to-day monitoring. If there is no monitoring vehicle, the inspectors would depend on the mining companies for travel to the mines. Therefore, the inspectors may develop social ties with mining companies and this could lead to wrongdoings by inspectors.

Adequate budget will also allow the inspectors and engineers to carry out timely monitoring of operations of the mines. Adequate budget will provide the means to the inspector to keep the record and report the mining related issues on time.

Starting from the fiscal year 2014-2015, while the daily travel allowance of a civil servant has increased, the total allocated budget has remained the same. Therefore, the allocated budget is not sufficient to meet the travel allowance claims of the inspectors in the field for the given period.

Limited Capacity and Expertise

The inspectors who monitor the mining operation in the field are mostly underqualified. They have undergone only a basic mining training in the department when they were recruited. Therefore, they have difficulties in the field in dealing with highly qualified engineers of the private sector. They feel inferior in front of these qualified engineers of the private sector and they are not in a position to dictate the terms while carrying out their job.

Since their recruitment by DGM, new scientific mining methods and technologies have been introduced in the mines, but inspectors are not up to date with such technologies. Hence, limited knowledge on the subject has deterred them from doing their duty effectively.

Without technical development, inspectors are confined within their limited knowledge and appear outdated. Therefore, they face difficulties in monitoring the mines. Sometimes, the decisions taken by inspectors could be over ridden by qualified engineers or vocal mining owners in the field. Moreover, if some inspectors face some technical problems during site visits and try to consult the engineers at DGM Head Office for a solution, they would have difficulty in questioning the qualified DGM engineers of the head office. Further, with very few DGM specialists at the head office, the responses could take time and eventually delay the final decision.

Shortage of Available Mining Engineers

In December 2015, DGM had eight full-fledged mining engineers. Out of eight engineers, two were pursuing higher studies outside the country and one was attached with ACC to assist in their research program. The five engineers take charge of leasing as well as monitoring the mines all over Bhutan. After interviewing the five engineers at DGM, it was estimated that about 70-75% of their time is being spent in doing administrative work and the remaining 25-30% is spent on engineering/technical related work (**Table 18**).

Engineers	Involvement/activity	Administrative Related Work	Technical Related Work
Engineer 1	Available	70%	30%
Engineer 2	ACC research	0%	0%
Engineer 3	Available	70%	30%
Engineer 4	Available	80%	20%
Engineer 5	Studies	0%	0%
Engineer 6	Studies	0%	0%
Engineer 7	Available	70%	30%
Engineer 8	Available	70%	30%
	Average	72%	28%

Table 18: Perceived work distribution of mining engineers through online survey done in October 2015

The available engineers are spending most of their time in doing administrative work, which is mainly the general official correspondence, preparing budget, data entry, attending meetings, solving human resource related issues, etc. Their engineering expertise is underutilised, while there is severe shortage of engineers in Bhutan. If qualified engineers leave the monitoring of the mines mainly to the inspectors, it would not be very effective.

Lack of Strategic Development Plan (SDP) for the DGM

Strategic management is the process of managing the mix of goals and strategic pathways that serve to define what the organization is, where it's going, when it wants to get there and how it is going to get there (Finlay, 2000). Thus, every organization should determine its strategic goals and accordingly a set of actions that will achieve its goals. This set of actions is described as a strategic plan or a strategic development plan (SDP). Thus, "SDP is a road map that determines the milestones of a journey towards building strong organization managed by dynamic and dedicated professionals and towards effective leadership" (ACC, 2010). The advantages of a well-designed strategy are numerous such as better guidance for the entire organization, offering manager more opportunities to take advantage of the environment transformations and new opportunities, facilitating the evaluation of resources necessary for the development of the organization and creating a more proactive management (Thompson, Strickland, 1999).

In order to design appropriate strategy, an organization should conduct strategic analysis to understand its strategic position taking into account the external environment, the internal resources and competencies, the expectation and influence of the stakeholders (Johnson, Scholes, Whittington, 2008). For example, DGM should perform a frequent resource assessment, analyze the legal framework and evaluate the expectations of its strategic partners. Although, DGM has developed some strategic plans over time, they remain unimplemented.

For example, the absence of a well-designed SDP is manifested in the following:

- Lack of common strategic objectives shared by all DGM staff;
- Absence of data mining;
- Out dated mineral deposit assessment;
- Lack of dynamic Human Resource Development(HRD) plan;
- Lack of Standard Operating Procedure (SOP) and guidelines;
- Absence of reflection to improve the key processes such as the lease process;
- Lack of monitoring strategy and mechanism;
- Lack of reflection on the mining lease period;
- Lack of timely royalty revisions;
- Weak partnerships with relevant stakeholders; and
- Weak assessment of strengths and weaknesses of rules and regulations.

5.6.3 Weak Monitoring

During the research, interviews with DGM inspectors were conducted and a survey questionnaire administered. The final sample was (n=45) from the total of inspectors population (N=67). The sample was representative given the size of the population of the mining inspectors. Therefore, the study could obtain

a clear understanding of the views of the mining inspectors on different issues. Their answers were used to illustrate some key challenges of DGM concerning the means of the inspectors.



Limited means for inspectors

Figure 18: Some factors of limited means for inspectors

a. Lack of personal computer

Most DGMs regional offices are poorly equipped. There is not enough budget allocated to procure computers, accessories or furniture for all inspectors. Most of DGM inspectors have not been provided a personal computer. On an average, there are two computers for eight inspectors in each of DGM regional offices. Moreover, they do not have access to internet at the workplace. As shown in Tables 19 and 20, most of the inspectors do not have computer (89% of the inspectors replied 'No') and access to internet at work (87% of the inspectors replied 'No').

As a consequence, without the minimum equipment, inspectors are not able to carry out their duties properly. It has a negative effect on their performance, as they unable to submit reports on timely manner, keep inventory of the mines and minerals and other data. This also means that reports are being sent in paper format to DGM. As a result, DGM will have difficulties to aggregate and analyse all the reports done by the inspectors.

Never	Seldom	Sometimes	Frequently	Mostly	Always	l don't know	Total
(1) 86.67%	2.22%	0.00%	0.00%	0.00%	11.11%	0.00%	100%
(2) 39	1	0	0	0	5	0	45

Table 19: Personal computer to do the job. Responses of DGM inspectors to the question "I have a personal computer given by organization to do my work" (online survey questionnaire, 2015). (1) In %, 'No' = never, seldom and sometimes, 'Yes' = frequently, mostly and always and 'I don't know'. (2) Number of respondents

Never	Seldom	Sometimes	Frequently	Mostly	Always	l don't know	Total
(1) 55.56%	11.11%	20.00%	2.22%	4.44%	6.67%	0.00%	100%
(2) 25	5	9	1	2	3	0	45

b. Lack of internet access at work

Table 20: Access to internet at work. Responses of DGM inspectors to the question "I have easy access to internet at work" (online survey questionnaire, 2015). (1) In %, 'No' = never, seldom and sometimes, 'Yes' = frequently, mostly and always and 'I don't know'. (2) Number of respondents

c. Lack of training

Most of the inspectors revealed that there is no training given that will help them in their jobs. As per DGM record, there are just few numbers of trainings given to some selected inspectors. One training is conducted every two years. The reason is that there is no budget for training, no resource person and lack of time to conduct the training.

Never	Seldom	Sometimes	Frequently	Mostly	Always	l don't know	Total
(1) 64.44%	22.22%	11.11%	0.00%	0.00%	2.22%	0.00%	100%
(2) 29	10	5	0	0	1	0	45

Table 21: Training opportunities. Responses of the DGM inspectors to the question "my organization gives extensive training programs for individual to help in their jobs" (online survey questionnaire, 2015). (1) In %, 'No' = never, seldom and sometimes, 'Yes' = frequently, mostly and always and 'I don't know'. (2) Number of respondents

Thus, as depicted in Table 21, to the questions "My organization gives extensive training programs for individual to help in their jobs", 98% of DGM inspectors replied No and only one inspector was of the view that DGM always provide training opportunity.

d. Insufficient financial means

In order to do proper monitoring of the mines, the inspectors have to be at the mine sites most of the time. This involves travelling from the regional office to the mine sites for which travel allowance is given. However, inspectors cannot make regular visits to the mines as they have other mandated works like issuing transport permits at the check point, highway inspections, attending duty at stockyard and preparing report. DGM is unable to provide the necessary travel allowance for the inspectors to even carry out half-monthly inspection at the mine. Sometimes, the travel budget is not provided on time or not provided at all to the inspectors, thereby making them dependent on the mining companies for logistic to do the monitoring. This may therefore, make inspectors vulnerable to wrongdoings in the monitoring process.

Never	Seldom	Sometimes	Frequently	Mostly	Always	l don't know	Total
(1) 55.56%	8.89%	13.33%	2.22%	2.22%	11.11%	6.67%	100%
(2) 25	4	6	1	1	5	3	45

Table 22: Enough financial means. Responses of DGM inspectors to the question "I have sufficient financial means to carry out my professional duties" (online survey questionnaire, 2015). (1) In %, 'No' = never, seldom and sometimes, 'Yes' = frequently, mostly and always and 'I don't know'. (2) Number of respondents

Most of the inspectors perceived that they do not have sufficient financial means to carry out their professional duties. To the question, "I have sufficient financial means to carry out my professional duties, 78% of the inspectors replied 'No' which means that there is no sufficient financial means provided to carry the monitoring works by the inspectors (Table 22).

To validate the description by the inspectors, the team analysed DGM budget. From July 2014, the amount of daily travel allowance increased for all civil servants but the total allocated annual budget remained the same.

Although DGM has tried consistently to increase its budget with the Department of National Budget, they were not very successful. Consequently, inspectors were left without the payment of their travel allowance although they went to the mines for monitoring. In 2014 - 2015 financial year, inspectors had no budget to conduct their monitoring duties for 4 months (Figure 19).

This situation is not good. In order to carry out the regular responsibilities of monitoring mines, the inspectors could become dependent on mining companies for travel expenses.



Figure 19: TADA claimed by inspectors: July 2014-June 2015. Source: authors' compilation from DGM's record

e. Weak suggestion consideration (case of Lonely Inspector)

The inspectors are not confident to do or take any decision and sometimes depend on the staff of DGM head office. However, people in the head office do not take their suggestions seriously. This lack of consideration could in turn demotivate the inspectors to carry out their duties. As a result, they could have a lower productivity.

Never	Seldom	Sometimes	Frequently	Mostly	Always	I don't know	Total
(1) 13.33%	8.89%	51.11%	4.44%	13.35%	2.22%	6.67%	100%
(2) 6	4	23	2	6	1	3	45

Table 23: Suggestion taken by the head office. Responses of DGM inspectors to the question "my organization takes my suggestion seriously" (online survey questionnaire, 2015). (1) In %, 'No' = never, seldom and sometimes, 'Yes' = frequently, mostly and always and 'I don't know' (2) Number of respondents

In most of the cases, the nature of monitoring and inspections work implies that inspectors remain at mine sites. They hardly meet with the officials in DGM head office. There are not many interactions between the head office officials and inspectors in the field/regional offices. This is clearly depicted in the Table 23. Neither seniors in the head office visit the regional offices nor do inspectors in the regional offices visit the head office to discuss the issues and challenges in the work place. Moreover, the inspectors mostly work in silo, which should not be the case when they have the same mandate to achieve common goals. They hardly meet other inspectors from other regions. They take unilateral decisions on their own for any kind of issues arising in the field. Thus, DGM inspectors are left alone and are in "Do It Yourself" situation.

Without effective communication and interactions between the inspectors and head office officials, they are likely to get demotivated and discouraged. Besides, the work of the inspectors are not monitored, for example, there is no proper record at DGM of what they do and how many times they visit mines. Data that are available are mainly on paper format and is not really used for analysis for various purposes.

Furthermore, few inspectors have received security threats in the border areas while doing their monitoring work. For example, an inspector in the field said, *"we are very scared…..we feel morally down because we are not physically equipped and we don't have any safety weapons to scare them"*.

As a conclusion, the paradox of the monitoring situation of DGM needs to be stressed upon. On the one hand, DGM inspectors are the central human control of the mining sectors. On the other hand, DGM inspectors are without computer, internet access, vehicles, financial means, regular training and consideration. As a result, they develop an autonomy, which could weaken the overall quality of DGM control of the mining sector. In such a situation, any employee such as DGM inspectors would hardly be motivated. A decline in their job satisfaction could decrease their performance and increase the likelihood that they will get involved in wrongdoings such as corruption.

DGM Conflict of Interest

The situation of DGM regarding Conflict of Interest (CoI) could be explained by the Agency Theory (Eisenhardt, 1989; Ross 1973, 1974; Jensen, Meckling 1976). Broadly speaking, the agency theory problem happens when a principal gives some power to an agent. The principal could be the owner of a firm and the agent could be the top manager. Thus, the agent is supposed to take decision on behalf of the principal. The agency problem is the fact that the agent could take decision that could affect the company of the principal despite the agent not really bearing the risk of his/her action (Ross, 1973, 1974). As a consequence, scholars working on the agency theory have tried to understand the reasons for the agency problem and also the way to resolve it (Jensen, Meckling, 1976; Fama, Jensen, 1983). If RGoB is considered as the principal and DGM as the agent, then there could be an agency problem.



Figure 20: Illustration of the DGM Conflict of Interest

Since DGM is both the decision maker and the key controller of the mining industry, in such a situation, the agency theory predicts that the agent (DGM) will not act properly on behalf of the principal (RGoB) (Figure 20). One potential solution to this theoretical problem for the agency theory is to detach the function of decision maker from the function of control (Fama, Jensen 1983).

Another aspect of the CoI was that, DGM is responsible for regulation and also facilitation of mineral production. DGM is the overall authority of the mines and mineral management in the country. NEC looks after environmental issues of the mining. They have two different roles with different mandates.

However, the roles and mandates of these two agencies contradict and issues arise regarding the authority of the management of minerals thereby leaving the miners confused as to who they should listen to when carrying out the operation of mines and quarries. For example, one of the miners stated, "*Government agencies work in silos*".

His Majesty the King, in his address to the nation on the 108th National Day celebrations (December 17, 2015) emphasised on work efficiency and cooperation.

He said "

......They must utilize their approximately 200 workdays a year, as well as our limited resources, judiciously to bring benefit to Bhutan for generations. Our small size means that we can achieve greater efficiency and speed in all our work. The civil servants must work with the greatest cooperation and harmony to achieve the best results. We must pave our own road ahead for a bright future".

5.6.4 Unclear processes

Mining Lease Process in Bhutan

The mining lease process involves implementation of many rules and involvement of several agencies such as DGM, DLG, DoFPS, NLC, DoC and the community at large.

The process starts with the submission of a mine application by the proponent in form B to the DGM. DGM is the parent agency to review the mine application. Thereafter, the application undergoes the scrutiny of the Mine Leasing Technical Committee (MLTC). This committee comprises of five members and is chaired by the head of DGM.

MLTC does a thorough review of the application submitted by the applicants and if it is accepted, it is forwarded to DGM to carry out pre-feasibility study, which is one of the important processes necessary for the mine lease. If the application has not fulfilled the criteria as mentioned in MMRR 2002, then MLTC informs the application about it in writing.

Once DGM has done the pre-feasibility study of the mines, the report is once again forwarded to MLTC for review. Based on the report, MLTC gives the signal to DGM for further action. The DGM then writes to DLLC for the clearance from DoFPS, DoC and then from the local community. If all the relevant partner agencies and community gives the clearance, DLLC writes to NLC recommending the issuance of land lease certificate. Based on this certificate, the applicant carries out the geological survey and the report is submitted to DGM for action.

At this stage, DGM reviews the geological report submitted by the applicants. After a thorough review of the report and upon its approval, DGM issues letter to the applicant to prepare FMFS (Figure 21).



Figure 21: Mining process flow chart 1

The applicant prepares FMFS report and submits to DGM for review. After DGM reviews and approves the report, it is then forwarded to NEC for its review and site inspection for grant of Environment Clearance (EC). After receiving EC, DGM then prepares a note sheet for the approval of MoEA for the grant of mining lease. After approval by the ministry, DGM signs a lease agreement with the mine applicant and issues work order to operate the mines thereafter (**Figure 22**). After signing the lease contract, once the operation of the mine has commenced, DGM inspectors also carry out monitoring and inspections.



Figure 22: Mining Process Flowchart 2

Comparative analysis

The comparative analysis of the mining processes gives a clear picture of how it is different in Bhutan from other countries. As depicted in the Table 24, the auctioned mines are leased for 15 years in Bhutan. The auction period for other countries such as Australia, Hawai State (USA) and India is far longer than in Bhutan with 21 years, 35 years and 50 years respectively. In India, for energy, the lease period is 20 - 30 years depending on the types of mineral **(Table 24)**.

Processes	Comparative analysis							
	Bhutan	Australia	USA (Hawai state)	India				
Auction Mines	15ys 10yr	21yrs	35yrs	50yrs Energy: 20 – 30 yrs				
Process timing for mining lease	Vague, unclear and not practical.	Clearly stipulates number of days to complete each process.	Nothing mentioned about the days to complete each process and to grant lease	435 days are required to grant Mining lease by the State Government				
Environment clearances/evaluation	Environment reporting and getting EC is necessary.	Getting EC is necessary	Environmental evaluation optional	Project Clearance from ministry of environment				

Table 24: Mining process compared

Concerning the process timing for mining lease, in Bhutan, DGM has developed a service delivery standard for the mine lease but it is still unimplemented. Not many people involved in the mining lease process are even aware that such standard exists. Moreover, service delivery standard is still vague and irrelevant in terms of implementation. At DGM, the officials involved decide to work on the mine lease process depending on their availability and the request of the mine applicants. DGM does not seem to be driven by service delivery standards either.

Some mine proponents said that they have not been informed and updated on the status of their mining application despite submitting the request 5 years ago. Some owners complained that the current mining lease process is too long and requires constant follow up from them. In India, it takes at least 435 days for the state government to grant a mine lease, which is a long period.

Bhutan is very cautious of the environmental impact when it comes to mining. This requires getting the consensus from the local community as well as getting administrative approval from the Dzongkhag. This seems to be an unnecessary burden since issues regarding the issuance of EC is already discussed and decided by the Dzongkhag Tshogdu (DT). Based on the findings and recommendation of DLLC, the report is submitted to NLC for land lease certificate. NLC, thereafter based on DLLC report, issues the land lease certificate.

Some miners remarked that obtaining 3-4 clearances from the same agency is an administrative burden and harassment and feels that the approval from DT and DLLC findings should suffice. Moreover, the mine proponent has to submit FMFS clearly mentioning mine plan, environment management plan and environment impact assessment plan based on which NEC conducts further site verification and assessment. EC in Bhutan are necessary and it is done precisely as per the rules and regulation unlike Hawai State where getting environment clearance is optional. Long and unclear processes often create frustration and it could lead to mining owners trying to bypass the rules. The research focused on identifying loopholes and ambiguities and inconsistencies in the rules and procedures, which have led to illegal, or dubious mining practices. It is found that there is a long mine lease process and thereby delayed decision-making by the authority concerned. A mine observer thus said, "*The lease process is very complicated. It could take up to 6-7 years*". This research could not get sufficient data to calculate an accurate value for the duration of the process; this is described in section 5.6.6.

The mining lease process was found to be too long consisting of about 13 sub-processes as required under different rules and regulations. This complicated long process could lead to wrongdoings by the mine proponents in order to speed up the process.

Weak community involvement

The weak community involvement is manifested in the following:

Unclear DLLC procedures

The local government is also responsible and equally involved in processing mine lease. MDP 2015 states: "local governments are responsible for the administration of 'The Local Government Act of Bhutan' related to consultation with affected communities and concerns regarding mining and its related activities as per the Public Consultation Guidelines (PCG)".

In order to consult the affected community, DLLC is established comprising at least five members namely: DLLC Chairman (Dzongdag), Dzongkhag Environment officer (DzEO), Dzongkhag Forest Officer (DzFO), Dzongkhag Land Record Officer (DzLRO) and divisional Chief Forest Officer (CFO).

After the conduct of public consultation through site visit and assessment, the members who are involved in field assessment submits a report to DLLC Chairman for discussion and the members further discuss on it. Based on the committee's decision, the report is then forwarded to NLC for processing of land clearances. However, there is no definite or particular member secretary for DLLC. Different Dzongkhags have different member secretary. Moreover, the research has revealed that there is no clear Terms of References (ToR) of DLLC, which have led to discretionary function of DLLC. The actual operation of DLLC differs from Dzongkhag to Dzongkhag based on the discretion of the committee and depending on the availability of the member's time to visits sites. There is also no clear provision on who and how many of the members will visit the mine. Some DLLC members also raised that they lack expertise regarding the mines which has hampered in conducting effective site verifications and assessments.

Unclear Public Consultation Process

The public consultation process (part of DLLC mandate) has created disharmony because of the ambiguity and inconsistency in the application of the public consultation process. PCG, which was developed by DGM is found to be impractical. DLLC and the local authority rarely follow PCG. Moreover, the people involved in the public consultation do not know about the existence of such kind of guidelines.

For example, a DLLC member stressed that, "People don't understand about consultation process, they take advantage of this process for their own benefit, sometimes one or two people try to influence the whole community, create disharmony and try to brainwash people". In such cases, the community with informal leaders could witness numerous interpersonal conflicts. In some situation, the conflicts could persist and generate disharmony within the local community.

Lack of Corporate Social Responsibility (CSR)

All over the world, companies are under pressure to provide innovate solutions to resolve human, social and environmental problems. Since the 70's, an important debate has risen to resolve the tensions between the need for companies to increase their performance and the need to pay attention to their Corporate Social Responsibility and therefore play a larger role in Society (Margolis, Walsh, 2003). Considering that Corporate Responsibilities is the degree of responsibility manifested in a company's strategy and operating practices, Corporate Social Responsibility (CSR) is then defined as "the subset of corporate responsibilities that deals with a company's voluntary/discretionary relationships with its societal and community stakeholders" (Waddock, 2004).

CSR has gained its popularity in many developing and developed countries like Australia, France, Germany, India and USA (Waddock, 2008). For example, mining companies in India follow the guidelines on CSR issued by the Department of Public Enterprises (DPE), Govt. of India while initiating plans and activities for community development. CSR initiatives by the mining companies in India focus on improving livelihood of the people nearby the mines, resource and environment management and contribution to relief measures. The Ministry of Mines of India, revealed that CSR activities during the year 2013-14 required an investment of at least Rs. 9 crores by the three renowned mining companies in India (Annexure 14). In India, CSR projects are being implemented with the help of recommended local NGOs in the targeted communities. The fund provided by the mining companies to implement these CSR activities are handled and managed by the local NGOs. India has formalized guidelines on CSR to ensure benefits of mining through plans and activities. They also conduct a needs assessment survey to identify Need-Based CSR projects wherever necessary realigning its CSR approach with DPE Guidelines. A portion of the profit earned by the mining company is allocated for the project that was identified based on the need-assessment survey. With CSR initiatives, people enjoy free health facilities, free education, drinking water, etc.

Despite gaining popularity and having added-value, some fierce criticisms have been made against CSR arguing that the firms should be guided by a single objective function: wealth creation (Friedman, 1970; Jensen, 2002). However, major empirical studies have showed that the development of CSR increased the financial performance. Thus, among many others, Bragdon and Marlin (1972) and Moskowitz (1972) stressed the positive relationship between CSR and performance. Looking at the last 40 years of research on the matter, it is clear that CSR increases the financial performance (Margolis, Walsh, 2003; Orlitzky, Schmidt, Rynes, 2003). Alongside with performance, CSR proponents have stressed some key arguments to CSR: the moral obligation or moral minimum (Donaldson, Dunfee, 1999), sustainability, the license to operate by governments and reputation (Porter, Kramer, 2006).

Even if CSR has its benefits for companies, the decision of firms to invest in it is mediated by several institutional factors: public and private regulation, the presence of nongovernmental and other independent organizations that monitor corporate behavior, institutionalized norms regarding appropriate corporate behavior, associative behavior among corporations themselves, and organized dialogues among corporations and their stakeholders (Campbell, 2007).

In the context of the mining industry in Bhutan, mining companies have developed some CSR actions. Thus, right after the public consultation process, the mining owners propose a Community Development Agreement (CDA) as part of their CSR. This agreement is the summary of what has been promised during the public consultation to reduce the negative impact of mining.

In the Mining sector, many criticisms could be made about CSR implementation.

First, the scale of CSR actions in the mining sector is limited. Only a few big mining operators have developed CDA as a part of their CSR actions with the communities.

Second, an issue could be the process to reach an agreement between the community and the mining owners. In Bhutan, there is no formalized procedure of developing a CSR agreement. Despite being important for mine owners to work in collaboration with the local communities, there is no clear decision process regarding CDA involving the various stakeholders such as mining company, DGM, local government and the community. Without clear decision process regarding CDA, corruption could increase. Thus, miners could try to influence local authorities or other gatekeepers with corrupt conduct. Without the clear guidelines for CSR, miners will use CSR as expenditure to smoothen the relationship with influential local leaders. The expenditure by the mine owners would hardly benefit the communities rather it would help them to build relations with some specific people. CSR without any guideline and monitoring could be seen as a form of subtle corruption. Indeed, the mine owners could try to influence the local communities through form of gifts, transportation arrangement, parties/gatherings etc.

Third, as a result, the agreements seem to be poorly designed, or at least for the profit of a few. As revealed by some local community representatives, there are some incidences where local authority tried to influence the whole community. Some people believed that local authorities received some kickbacks or bribes. Without clear and practical implementation and monitoring of PCG, the mining owners could be involved in corrupt behavior through collusion with the local people. The evidences from ACC case analysis and RAA reports further substantiate this possibility.

Fourth, CSR strategy and actions are not really known to the public. Thus, even if few mining companies develop some CSR practices, it is likely to have minimum benefits since only few influential local people are likely to be present while drawing the agreement. Therefore, the general public could be kept in the dark, not knowing the content of CDA. As a local community member said "………but only if local leader and the mining owner are involved with illiterate local people and in worst situation if the local leader and mining owner collude with each other; there are every chances that whatever said by mining owner contradicts with the written agreement and get signature from the local people. I think this kind of corruption is occurring".

Fifth, firms could be subjected to a certain form of cynism, pretending to develop some CSR strategies without any real substance. Some firms have been accused of greenwashing, defined as "the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the environmental benefits of a product or service (product-level greenwashing) (Delmas, Burbano, 2011). In the Mining sector, the situation could be the one of mine owners giving false promises and forgetting about the signed CDA. This could be the result of the absence of CDA control mechanism. Further, once the agreement is drawn, no one in the local authority, DGM or the mining company seems to care whether it is implemented or not. For example, some respondents said that some mine owners did not abide by the agreement they made with the local people nor did they follow on the promises that were reflected in the agreement. A local representative described the situation "………in the past they had promised that they will help in maintaining monastery and school but this has been like an orange in the baby's hand. They promised that they will do but till now they haven't done as such. We expect they will do something beneficial for the community but they don't in reality. However, we don't know what they will do from now and we don't expect too".

Sixth, reaching an agreement could create more harm than benefits. Public consultation process could create a division among local community members. Some locals are in favour of mining while some other community members are not. Mining owners could use this division to influence local authority through unethical means. The local communities could use this process as a medium to demand more from mining owners and in turn, this could lead to mining owners making false commitment and promises. The absence of CSR creates lot of tensions in the communities could make irrelevant or unreasonable requests. Furthermore, without CSR guidelines, the communities could make irrelevant or unreasonable requests. They could demand anything from the mining owners. The local communities could arise between the community members and the mining owners.

Seventh, the research found that there is no monitoring of the public consultation process and CSR activities. There is no proper mechanism defined whereby monitoring of the public consultation process would be ensured. Unlike India, Bhutan does not have clear guideline on CSR and the community does not have strong NGOs who could facilitate in the implementation of CSR programs and plans. In such a situation, the mining owners are likely to consult anybody who might sometimes lead to unethical practices. In turn, local people would not be really involved in the consultation. Further, there is no monitoring of CSR actions. Some miners have signed an agreement but there is no independent agency to monitor implementation of such agreements. Therefore, without proper monitoring, problems could rise between the miners and local communities. Unclear processes could also lead to wrongdoings and corrupt practices in the consultation process. Uncontrolled and unmanaged conduct of the people involved could also lead to serious social tensions and disparities in the local communities.

5.6.5 Too short a mining lease period

In Bhutan, there are different lease periods depending on the type of mines and minerals. Captive mines and stone quarry are usually given for ten years while talc mines are given only for three years. As Table 24 shows, many countries give longer lease period. This short term lease in Bhutan could lead to unscientific

and unsustainable mining. Indeed, facing important investments challenges, mining owners are unlikely to get much return on their investment within this short time frame. Therefore, more than ensuring benefits to the local communities, mining operators would be more interested in profiteering within this short period and their operations could bring problems and disturbances. In order to capitalize within a short period, mine owners could take "short cuts" such as using corruption to "grease the wheel" (Venard, 2013). Mining owners could become more unscrupulous to increase their profits through giving bribes to public officials and the local authority. Public officials could also extort mining companies while carrying out monitoring of mines. For example, during the qualitative phase of this research, the researchers met respondents who described a potential indirect corruption process. In order to extort money from mining owners, public officials would borrow money from the mining owners without any intention of paying back the money. Under the influence of and obligation to the mining owners, public officials are not likely to monitor the implementation of CSR carefully.

5.6.6 Weak data mining

Knowledge management has gained more importance since the 90's in the management literature (Nonaka, Takeuchi, 1995, Spender, 1996; Tsoukas, 1996). The appropriate management of knowledge is nowadays a necessary component of any organization's functioning, not only the management of the existing knowledge within firms but also the ability to apply this knowledge and to create new knowledge. Building, coding, storing and transmitting knowledge have been considerably developed due to modern technologies such as internet, intranets, extranets, data analysis techniques, data warehouses and software. Knowledge discovery in databases refers to the overall process of discovering useful knowledge from data and data mining refers to a particular step in this process (Fayyad, Piatetsky-Shapiro, Smyth, 1996). Many scholars use the word "knowledge" to emphasize that knowledge is the end product of a data-driven discovery (Piatetsky-Shapiro 1991). Data mining is the application of specific algorithms for extracting patterns from data (Fayyad, Piatetsky-Shapiro, Smyth, 1996). Historically, the notion of finding useful patterns in data has been given a variety of names, including data mining, knowledge extraction, information discovery, information harvesting, data archaeology, and data pattern processing (Fayyad, Piatetsky-Shapiro, Smyth, 1996; Larose, D. T. (2014). The term data mining has mostly been used by statisticians and the management information systems (MIS) communities (Chen, Han, Yu, 1996).

However, in this research "Data Mining" refers to the overall process of discovering useful knowledge.

During this research, the researchers had no real clue of any real data mining at DGM. The weak data mining may also be a crosscutting problem/inadequacy in all the public and private agencies of Bhutan. The weak data mining in DGM could have severe consequences. At a strategic level, the wrong information could lead to wrong analysis and then lead to wrong policy and planning. Hence, in the mining sector in Bhutan, weak data mining has led to a weaker monitoring of this economic sector. As a result, the mining sector cannot give its full added value to Bhutan especially in terms of financial contribution. At an operational level, the inappropriate data mining could slow processing of lease, hamper quality of monitoring and quality of service delivery.

The data mining challenge is divided into different interrelated issues.

First, DGM may not have the information at all. This could be due to lack of clear priorities to monitor the mining sector. Sometimes, the information at DGM is piled up in the bookshelf without being used while some information could be seen lying on the desk. After a while, this information could be forgotten or misplaced.

Second, when the information exists at DGM, the information is not in a format that can be easily aggregated for further analysis. Weak data mining means poor recording and improper cataloguing of the information by DGM. DGM inspectors having no computer are likely to send reports on paper format making it difficult to analyse these reports sent by 67 inspectors.

Third is the lack of standardized data and information format. Reports, notes, studies exist in DGM in various formats. With different types of presentation, the data available in these documents could not be used easily.

Fourth, the question of easy access to data is crucial. In order to analyze the data and to make it useful information from the mining sector, it is necessary to have ready immediate access to data and information. The researchers experienced extreme delays in trying to get basic information about the mining sector from DGM. The research found that there is no appropriate IT system to facilitate easy access to data and information at DGM. To cite a small example, the researchers expected to get email from DGM respondents but later realized that many did not have an official email. Further, they did not seem to really use emails as a means to communicate. The question of access is also linked to necessity of storage. This is a challenge that the developing countries face due to shortage of financial means and lack of proper systems in place. It is surprising to know about the lack of data protection issue there is no real database system in place. Nonetheless, it is important to keep data safety in mind for the future data mining strategy.

Sixth, an important question is the use of information. Assuming that the previous challenges are resolved, DGM should use the available information to control its strategic objectives to monitor its staff and the mining industry. For example, most of works such as dispatch are done manually in the regional offices. An inspector describes, "We face difficulty in issuing the transfer permits to all the three hundred numbers of trucks in a day by writing on the paper manually. Sometime there is the chances that we might make mistakes in the process since we just write and issue the permits on the paper. On the next day only we do a data punching after we reach back to the office".

In order to give a full understanding of the data mining challenge, it is necessary to describe an incident that happened during this research. During an interview with a DGM official, a researcher asked, "How long on an average does it take for a mining lease to be approved from the day of application to the approval? DGM official replied, "It is complicated. It could take many years". The researcher asked again, "But how long exactly?' The official said, "It takes up to 6-7 years". Being surprised, the researcher requested: "Do you have the information about all mine lease?" The official replied, "of course, we will provide it to you". Soon after the meeting, it was clear that there was no updated list of the mines in operation on excel file in DGM. Therefore, the researcher sent an excel file made by the researchers to DGM the same day. The

demand was simple: to add mines in operation, the date of their application and the day of the leasing. Seven days after, the initial request without receiving anything, the researcher sent a reminder again asking for the same information. Finally, 9 days after the first plea, an excel file was transmitted by DGM to the researcher. The information provided by DGM was 60% incomplete or wrong. However, using the limited information sent, the researchers calculated that on an average the lease was given in 18 months, very far from the initial guess of 6-7 years. Of course, the result of 18 months could still be wrong due to weak data mining (Figure 23).



Figure 23: Description of the quality of information provided by DGM for the single request concerning lease process, November 2015

5.6.7 Summary of the key findings



Figure 24: Vicious Cycle of Mining in Bhutan

The key findings can be summarized with the vicious cycle of mining (Figure 24). This figure underlines the issues in the mining sector in Bhutan over the years. The problems in the mining sector are not concentrated in one single issue but multiple connected issues. The wrongdoings in mining is not a matter of one issue that assimilate others wrongdoings but it is an issue of having no clear strategy, no policies in place to enhance sustainable mining, and lack of monitoring and controls due to limited resources.

As discussed, the mining sector is exposed to higher corruption risk than other economic sectors in Bhutan. This situation has been developed over years. The vicious cycle of mining stresses the link between different causes and consequences leading to higher risk to corruption. A key issue is certainly the lack of appropriate data on mineral resources of Bhutan. With the last overall update for the assessment of minerals done a long time back (in fact in 2002), the country is yet to review an appropriate Mineral Development Policy. In such circumstances, the private sector takes the initiative to look for mining opportunities and therefore take advantage of 'first come first serve' system of allocating the mines and quarries. "The first come first serve" is the highest entry mode of private investors in the mining sector in Bhutan has rarely auctioned mines to private investors with only three mines so far. This has led to lower revenue generation from the mining sector to the country. Moreover, DGM has not revised the mineral royalties since 2006. With lower revenues, the government of Bhutan is not able to allocate adequate resources to DGM and other agencies. A direct effect is that DGM with inadequate resources cannot perform adequate monitoring of the mining sector. The weak data mining at DGM is a good example of negligence in this matter. The potential outcome is that wrongdoings could rise without being properly monitored by the key controlling agencies like DGM.

Another repercussion of weak monitoring and data mining is that the decision maker at the highest level will not have a clear view of the mining sector. The vicious cycle of mining will last until strong policy and an optimal decision are put in place. Given that Bhutan needs all its resources for its development, it is obviously time to switch away from the vicious cycle of mining and be in line with GNH strategy. To this end, the recommendations are proposed in the next section.

6. RECOMMENDATIONS

6.1 Develop simple and clear Roles and Responsibilities of the agencies involved (low cost and short term)

In order to institute effective coordination and create better synergy among the relevant agencies, it is recommended to institute a biannual coordination meeting amongst the agencies on updating and sharing of information and resolving work challenges. This will allow the different agencies and stakeholders involved in mine processing to come together, discuss different issues in their respective areas, and come up with pragmatic solution.

A priority agenda for this biannual coordination meeting should be to delineate and recognise clear roles and responsibilities of the different agencies and stakeholders involved in mining process. The process for leasing mines, monitoring and renewal of environment clearances should be clarified and streamlined so as to minimise duplicating roles of the different agencies, ensure effective partnership and resolve issues together.

It is also recommended to develop and ensure *strict implementation of service delivery* standard/turnaround time for granting of a mine lease. At present, there is no clear timeline developed for processing the services by the agencies concerned such as DGM and NEC and this has led to delays in service delivery. When officials adhere strictly to the service delivery standards, it will benefit the agencies and stakeholders by ensuring timely accomplishment of the duty and accountability of officials in ensuring quality service delivery. This should be the integral part of the organisation development and should be monitored by the administration division of the agency. With proper monitoring of the service delivery standards, it will minimise opportunity for the frontline officials to be involved in wrongdoings and corrupt conduct. For example, applicants will be less likely to use bribe if service delivery standards are clear.

6.2 Initiate effective coordination among concerned agencies (low cost and long term)

In the previous recommendation, a coordination mechanism meeting was proposed which is simple, fast and not expensive. However, it is clear that other coordination mechanisms should be developed between the several agencies involved in the mining sector.

Better coordination is required among the agencies such as NEC, DGM, local government (Dzongkhag and Gewog) and mine owners to have a better understanding of the problems and issues faced by the stakeholders. Effective coordination mechanisms will give more opportunities to know each other's problems, create a work place where everyone understand each other's roles, and ensure effective coordination.

To this end, the following coordination mechanisms between the different entities are recommended.

a. Coordination through linked objectives

Agencies/stakeholders mentioned above that have some common goals or overlapping objective should work towards ensuring sustainable mining with less negative impact to environment, culture and socio-
economic wellbeing of the people nearby mines. For example, agencies such as NEC and DGM should share the goal of establishing an effective monitoring of mines.

b. Coordination through direct supervision

Better coordination could be built through direct supervision by the authorities concerned depending on the expertise they have. For example, concerning the environmental impact of the mines and renewal of the environmental clearances, NEC could lead its supervision and involve DGM and other relevant stakeholders.

This type of coordination would foster trust and confidence in each other's work and particularly trust in the lead agency (whoever is the in charge of supervision) and lessen the communication barrier among the agencies.

c. Coordination through technology/online services

Coordination through technology/online service is important for ensuring efficiency and effectiveness in the service delivery system. It saves resources like time and human resources thereby enabling better service delivery to the applicants and miners. It reduces human interface and thereby reduce wrongdoings and malpractices among service users and providers.

Depending on the feasibility, some processes of the mine lease or services of DGM and NEC such as putting up an application for mines lease and updating the information by the mine owners could be done online.

d. Coordination through integrated staff

Coordination among the agency is more effective when agencies know each other in terms of mandate and responsibility. Coordination through integration of staff is worthwhile when agencies share some similar objectives. The exchange of staff on relevant field of expertise could create better understanding. In case of relationship between DGM and NEC, it is recommended that DGM staff could be integrated with NEC to learn about environment impact assessment and in turn, NEC staff could be integrated with DGM to learn about mines and minerals.

6.3 Develop Mining Strategic Development Plan (MSDP), (high cost and long term)

In order to optimise the Mining sector strategy (i.e. the long-term direction and scope of the DGM), a MSDP should be developed and implemented. MSDP is a "road map that determines the milestones of a journey towards building strong organization managed by dynamic and dedicated professionals and towards effective leadership" (ACC, 2011). It is crucial to design this strategic planning, this systematic process through which strategic thinking is formalized and plans devised to support strategy implementation.

Considering the vicious cycle of mining, priority should be given to the assessment of the mineral resources. This is the turning point to design suitable mineral development plan. This resource assessment should be done along with a clear view of the mining trends, clear evaluation of the demand of minerals and evaluation of the mining competition.

There is also the need to assess existing human resources capacity and future human resources needs of DGM. It is recommended to develop and effectively manage dynamic HRD plan, build and enhance strategic partners with and amongst relevant stakeholders. Ploughing certain percentage of mining revenues for effective monitoring and sustainability proposed could also be explored in MSDP.

The research suggests that DGM carry out a *proper study on mining capacity of the area* when it comes to leasing the mines and quarries. If this is done, it will ensure minimum cost of mining in terms of environment, social, economic, health and wellbeing of the local community. Therefore, proper study should be done by DGM before any mine or quarry is leased in a particular area.

The strength of the policies and legal framework also need to be reviewed periodically. For example, MMMA 1995 need to be reviewed and adapted to changes according to MDP 2015.

6.4 Improve mines monitoring (high cost and long term)

The mines monitoring could be improved through the following:

It is recommended that the training on *"Ethics and Integrity"* for all the employees of DGM, NEC, DoFPS, NLC, local government and mine owners be organised. This training should address areas of misconduct by the stakeholders involved in their work place (DGM must continue with its initiative to give training to the employees of the mines regarding mines related capacity building). This short term training on ethics and integrity must be given to all the employees in collaboration with the relevant institution such as ACC and RIM. For example, in Australia (Tasmania), the Integrity Commission initiates in-house training to the public sectors to build integrity capacity and to reinforce ethical decision-making. Similar training may be initiated by the aforesaid stakeholders to ensure ethical conduct in the work place. This should ensure that everyone involved in mining understands the importance of ethics and integrity and practise what they learn in the work place.

In order to enhance integrity, it is recommended that a compulsory "*ethical code of conduct*" for all officials involved in the mining sector be established. This should start with DGM staff, in particular DGM inspectors. Generally, internal ethical code of conduct is required for all the aforementioned stakeholders. MoWHS has "*code of conduct and ethics for engineers*". MoWHS code of conduct clearly reflect responsibility and obligation to the profession in different situations and scenarios.

A specific code of conduct may be developed for the inspectors and mining engineers in particular. Having ethical code of conduct will have no added value if it is not clear, understood, shared and made compulsory for all employees. All employees must be guided by the ethical code of conduct and disciplinary/administrative actions must be taken promptly and seriously if the ethical code of conduct is not adhered to.

Beside this, a training on "*effective monitoring*" for engineers, inspectors and environment officers is also recommended. This training should allow them to learn good practices of monitoring and work culture. Such training will help them conduct effective monitoring and will help them refrain from any wrongdoing. A training on management of CoI for DGM officials is very important in terms of ensuring effective monitoring and independent working culture by the inspectors. As per Bhutan Civil Service Rules 2012,

Chapter 3, civil servants are obliged to declare CoI. Therefore, in collaboration with ACC, proper training on *declaration and management of the CoI* by DGM officials should be given and this will remind them periodically to stay away from any wrongdoings. The mere declaration of CoI will have no value if there is no check and balance.

The research proposes to consider *providing one qualified mining engineer* for each regional office of DGM so that the inspectors will not have to depend so much on the engineers from the head office. The current practice of decision being taken by the engineers at head office is not practical and relevant as they are not in the field. Moreover, involving engineers at DGM head office is also time consuming when in fact many decisions regarding mines need to be taken fast.

It is recommended that *at least* 3 - 4 *computers* in each regional office (one computer for two or three inspectors) be provided to be used for report writing and submission of field reports on time. Moreover, such means may motivate the inspectors to carry out their duty effectively and ensure proper recording of the information.

The research advocates providing *at least one pool vehicle for site visits* in each regional office of DGM and that proper monitoring on its use is ensured by the regional coordinators. This will allow the inspectors to carry out proper monitoring independently without having to depend on the mining companies for logistics and transport. This will in turn will help them stay away from colluding with the mining companies and from engaging in wrongdoings.

It is also recommended that DGMs budget be increased to cover TA/DA for the inspectors so that timely inspection and monitoring of the mines and quarries can be effectively undertaken. This will also reduce the inspectors' dependency on mining owners for transportation and logistics.

To properly monitor the mining industry, it is proposed to establish a strong IT system whereby all mining companies have to prepare and submit an *online Annual Corporate Mining Report*. This compulsory Annual Corporate Mining report will allow DGM to collect updated information and ensure proper assessment of the performances of the mining sector. This report should be prepared in accordance to the needs of the relevant stakeholders, in particular, DGM and NEC.

It is also necessary for DGM to *prepare an Annual Mining Report* whereby the information collected are put into a database that is available for public use.

It is further recommended to strengthen the system *of Financial Disclosure Programme of Inspectors, Mining owners/CEOs, Board members and mining staffs.* A similar kind of disclosure is already practiced through ACC with the system of declaring income, assets and liabilities by the public servants. As controlling the mining industry, engineers and inspectors should be required to declare assets, incomes and liabilities as per the rule. The assets declaration system for the vulnerable group like inspectors and engineers need to be carried out strictly and serious action taken on non-declaration and false declaration. The financial statement disclosure system by the company should continue and be effectively regulated by the concerned agency. Further strengthening of this program is found necessary. Mine risk assessment such as consequences of mining to the local community in terms of health and wellbeing, assessing the water quality and land degradation through involvement of local community, students and chemistry teachers must be initiated. A proper assessment of the consequences of mining will give clear direction on what needs to be done by the government and where attention needs to be given by the miners. Such kind of mine risk assessment must be initiated by DGM in collaboration with local authorities and mine owners. The risk assessment will help DGM to prioritize their DGM activities specially in the light of their limited resources.

DGM should also focus on *mine risk assessment inspections*. Mine risk assessment is the monitoring of mines based on the risk. The Mine Risk Assessment is the overall process of identification and evaluation of the different risks involved in the mining industry: such as corruption, environmental damages, health risks, etc.

The mine risk assessment inspections are carried out based on the risk that are associated with that particular mine. In other countries, this approach has been followed as a part of safe and sustainable mining. For example, in Virginia, the health related inspections of mines are linked to a risk assessment. Hence, the more frequent regular inspections of coalmines in Virginia is scheduled based on risk assessment of ensuring a safer and better work place for Virginia's coal miners. Similarly, DGM should also focus their inspection and monitoring based on such risk assessment.

DGM should also carry out *Non Routine Inspections of* the mines to see how the mining companies are performing and adhering to mine plans.

6.5 Establish an Independent Mining Regulatory Authority (MRA), (high cost and long term)

Proper development of the mining industry requires an adept handling of diverse conflicts of interests. The government has to facilitate the economic outputs of the Mining sector and at the same time, maximise social benefits of the mining industry and protect the environment. In order to deal with conflicting demands (economics, social and environmental demands), it is important to control the mining operation. As RAA in its report concerning the mining sector stated: *"besides the scrutiny carried out by statutory auditors, the Parliament may require periodic review of mining companies by other oversights agencies with adequate legal mandate to carry out the regular review of their accountability, performances and business affairs"* (RAA, 2014: 90). Similarly, the Supreme Court of Australia stated, *"Without effective monitoring and enforcement, the State risks losing financial, economic and social returns and gaining potential long term liabilities"* (2011: 24).

Indeed, regular audits are an excellent tool to bring "fresh minds", to provide outside perspectives on mining activities and any compliance matters (Marcus, 2007: 513). Moreover, the information provided by the Mining industry should be controlled with the same professionalism as for the auditing process of a company's financial information (Jenkins, Yakovleva, 2006). Furthermore, it is well documented that strengthening the audit will lead to a decrease in corruption (Dye, Stapenhurst, 1998). For example in Australia, regular compliance audit (an objective assessment of a project's compliance against selected

criteria) are carried out by the Department of Environment in the mining sector. In this case, projects can be chosen for audit based on a random selection process or a risk-focused selection process. Also in the Australian Northern Territories, the Department of Mines and Energy has a specific "Performance Group" with responsibility for the inspection and audit of mining operations to ensure adherence to Northern Territory and Commonwealth legislation and operating approvals and for ensuring the use of best practice and due diligence in environmental management.

Keeping the above in mind, the research recommends establishing an independent MRA, which will ensure independent monitoring and auditing of the mines. The establishment of MRA is also highlighted in MDP 2015, "An independent authority, MRA will be established to undertake the regulatory functions separately and effectively".

A key element in the quality of the audit of the mining industry is the independence of the MRA. Many authors describe independence as a key aspect in organizing an audit agency (Diamonds, 2002). Independence of an audit agency in carrying out financial, compliance, and performance audits puts the agency in a unique position to legitimately and credibly evaluate the effectiveness and efficiency of government policy and obligations, and to report on any unsustainable mining practices (INTOSAI, 2010).

The main duty or the responsibility of MRA should be to control mines and quarries in operations with the following principles:

- Independent from DGM and the executive power;
- MRA senior executives nominated and appointed through transparent and participatory process;
- Well resourced (measured by sufficient resources allocated by the Parliament to conduct their mandated functions in a timely manner);
- Power of investigation, including power to conduct on-site inspections, whenever and whatever;
- Powers to give sanctions (disciplinary, administrative, and fines) for breaches of rules; and
- Mandated to promote compliance through training of mining staffs, public officials and educational materials aimed at the public.

Apart from these general principles, it is recommended to follow the international best practices in deciding the scope and organization of MRA. In particular, the International Association of Supreme Audit Institutions (INTOSAI), based in Vienna, Austria, has developed several audit guidelines to conduct financial, compliance and performance audits (For example, INTOSAI, 2013ab or 2010).

6.6 Establish a system for periodical revision and realization of royalty, mineral rent, license fees and surface rent (low cost and long term)

The royalty and mineral rent have not been raised for the last 10 years. Periodic revision based on inflation, potential value addition and sales value would enable fair and sustained revenue for the government. The research advocates the establishment of a system of periodical revision of royalty, mineral rent, license fee and surface rent with different rates for the domestic and export markets. It also suggests that periodical revision should be undertaken every five years and the royalty be increased based on inflation rate, sales value of the minerals and the economic situation of the country. This is because a considerable amount of



revenue is being lost by the government due to non-revision and as well as inflation. The following example demonstrates possible revenue loss from Dolomite.

Figure 25: Royalty amount forgone for Dolomite since the last revision (2006). Source: World Bank and DGM, 2015

The royalty rate fixed for dolomite between 2006 and 2014 was Nu. 50 per ton as shown by the red line of the Figure 25. This figure shows the amount of royalty revenue earned over the years (2006-2014). During the period, there was no revision of royalty. Given that royalty rate, the total amount of royalty revenue earned by the government over the last eight years (2006-14) is Nu. 102 million. This is shown by the blue line. However, if the royalty rate had changed at least following the annual inflation rate of Bhutan, the royalty revenue earned would have been Nu. 175.8 million. Considering only dolomite, the government has lost Nu. 73.8 million between 2006 and 2014. Likewise, the estimation for the 10 minerals and stones of Bhutan is a loss of Nu. 523.58 million as shown in Figure 26.



Figure 26: Royalty Amount Forgone (2006-2014). Source: World Bank and DGM, 2015

Another way of maximising the benefit from mining in terms of royalty is to ensure that the total royalty earned should be equivalent to 10% of the stock value like in some other developed countries such as Australia. Australia has set the target to get 10% of the stock value of mines. Depending on the feasibility and market structure, the research recommends minimum royalty based on 10% of the stock value of minerals to ensure sustained revenue generation for the government.

6.7 Strengthen the guidelines for effective community involvement (high cost and long term)

The research suggests to *review DLLC mandates and guidelines*. It should include clear roles and responsibility of DLLC to ensure strict implementation of DLLC guidelines.

PCG developed by DGM was found to be unclear and not practical. Thus, people involved in the consultation process have no idea of PCG. Therefore, DGM should *review and must ensure strict implementation of PCG*. It should specify clear objectives, proportion of representation by the relevant communities, duties of each stakeholder and monitoring aspects of the consultation process.

Moreover, CSR strategy and actions are found to be very weak for the local mining communities since there is no guideline. Therefore, there is a need to *develop guidelines on Corporate Social Responsibility strategy*

and actions. DGM should be the overall agency in charge of the public consultation and CSR in ensuring strict implementation and compliance monitoring. This should ensure community development through the plans and programs developed by the mine owners together with local communities.

Bearing in mind that mining owners could use CSR actions as a tool to influence the local communities, the research advocates that CSR actions be strictly controlled and that the decision to allocate funds on community benefits should be done by mine owners in the presence of DGM and local authority. Like in India, the implementation of CSR practices could be facilitated by the local NGOs or by the local community group in Bhutan.

6.8 Initiate wider advocacy (low cost and long term)

The research proposes that DGM initiate wider advocacy and ensure better coordination and consultation for awareness about the land lease rules, MDP and Environment Protection Act involving media at the Dzongkhag level. This should ensure wider participation by schools, public institutions and local government.

6.9 Revisit short term lease period (high cost and long term)

At present, the short lease period is an incentive for mining companies to excavate as much as they can in order to recover their investments within a limited period of mine operation. Studying the possibility to extend the lease period in exchange for increase of royalty is suggested **(Recommendation 6.6)**

6.10 Develop data mining policy (high cost and long term)

The research advocates the development of effective data mining policy by DGM and MRA. The researchers found that data mining system is very weak at DGM. The actual quality of the data management is a source of low productivity, loss of information and weak analysis. A clear data mining policy should be developed and should specify the following:

- Clear objectives of the information system;
- Information system design (digitization, security and storage capacity);
- Data procedure specification (right of users, access and maintenance);
- Information gathering process ;
- Data analysis process (exploration and decision); and
- Improvement system (continuing education).

7. CONCLUSION

The mining sector is a growing contributor to the economic development of Bhutan. The Government has identified it as the one of the five jewels to drive the country's economy. Since the availability of natural resources is essential for Bhutan's prosperity, considerable attention need to be given to the mining sector.

This empirical research on the mining industry of Bhutan has portrayed the mining sector as being highly susceptible to corruption. In the past, the mining industry in Bhutan has unearthed several corruption cases. With the establishment of ACC in 2006, the mining sector has been under the strict scrutiny of the government to prevent large-scale frauds. As a result, the assessment of corruption through this research has allowed better understanding of the structural weaknesses of the industry. The research has shown that currently the mining sector has weak governance, at least by looking at the weak DGM monitoring, insufficient resources allocated to monitor and the absence of data mining strategy. Indeed, over the years, a vicious cycle of mining has developed that could further weaken the performance of the sector.

From this diagnosis, the research has advocated different recommendations to overcome the vicious cycle of mining. Starting with a clear assessment of the mineral resources of Bhutan, a strategy should be properly designed. This strategic mineral policy should define the objectives mainly for the promotion of economic growth, ensuring sufficient supply for the domestic market growth, controlling the environmental impact and the governance structure to achieve the priority strategic goals.

Thus, the new strategy for the mining industry should strictly follow the GNH philosophy that seeks to contribute to the peace, and happiness of the people of Bhutan and the security and sovereignty of the nation.

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ANNEXURES

	Revenue earned from Royalty and Mineral Rents from 2010 to 2014 (in Nu. million)						
Commodity	2010	2011	2012	2013	2014	Total	%
Coal	8.065	10.132	8.297	4.562	8.166	39.222	
Dolomite	53.485	53.377	74.709	78.642	101.992	362.204	43.4%
Limestone	25.764	30.213	26.889	42.613	48.058	173.538	20.8%
Const. material	0.979	2.809	32.326	3.700	4.122	43.938	
Gypsum	34.665	36.563	32.326	36.460	43.041	183.056	21.5%
Quartzite	2.048	21.615	2.291	3.383	3.104	32.440	
Total	125.005	154.709	176.839	169.361	208.483	834.398	85.1%

Annexure 1: Royalty and mineral rent contribution from 2010 – 2014. Source: authors calculation based on DGM records

Annexure 2: Royalty Rate in Australia, India and Bhutan. Source: Department of State Development: Mineral Royalty Rate Analysis Final Report 2015, Government of India: Mine and Minerals (Development and Regulation) Act, 1957 (No. 67 of 1957, as amended up to 10th May, 2012) and DGM: Proposed Revision of Royalty and Mineral Rent (2015)

Commodity	India (Royalty rate in Rs.)	Western Australia (Royalty rate in USD)	Bhutan (Royalty in Nu.)	rate
Coal	14% ad-valorem on price	\$ 1.00 a tonne (<i>domestic specific rate</i>)	Export	100
	of coal		Domestic	50
Dolomite	Rs. 63 per tonne	\$ 0. 62 a tonne (<i>specific rate</i>)	Export	40
			Domestic	40
Gypsum	20% of sale price on ad	\$ 0.62 a tonne (<i>specific rate</i>)	Export	100
	valorem basis		Domestic	50
Iron Ore : (lumps, fines & concentrates all grades)	10% of sale price on ad valorem basis.	5.0% (beneficiated Iron Ore - ad valorem)7.5% (Lump and fines Iron Ore on ad valorem)	Domestic	20
Limestone : (a)L.D. grade(less than one and half per cent silica content)	(a) Rs. 72 per tonne	Limestone used for agricultural or construction purposes: \$ 0. 62 a tonne (<i>specific</i>)	Export	100
(b)Others	(b) Rs. 63 per tonne	Limestone for metallurgical purposes: \$ 1.00 a tonne (<i>specific rate</i>)	Domestic	34
Quartz	15% of sale price on ad	7.5% of the royalty value if crushed	Export	100
valorem basis. material		material 5% of the royalty value if concentrate	Domestic	30
Talc	18% of sale price on ad	\$ 1.00 a tonne (<i>specific rate</i>)	Export	100
	valorem basis.		Domestic	40

Annexure 3: Royalty accrual for major minerals other than coal, lignite and sand for stowing from 200-2013 (in Rs. million). Source: Ministry of Mines, Government of India, Annual Report 2013-2014

		Revenue from	royalty contribut	tion (in Rs. million)
States	2009-10	2010-11	2011-12	2012-13	Total
Andra Pradesh	3,703.8	3,819.200	4,487.100	5,173.200	17,183.3
Assam	23.400	18.100	18.700	10.100	70.300
Chhattisgarh	4,743.975	11,940.537	13,463.070	12,115.550	42,263.132
Goa	2,859.138	9,591.168	9,427.381	3,280.217	25,157.904
Gujurat	1,929.066	1,938.989	2,233.743	2,703.966	8,805.764
Haryana	NA	0.844	NA	NA	0.844
Himachal Pradash	479.789	NA	900.803	NA	1,380.592
Jharkhand	2,019.193	4,402.954	6,459.123	6,987.646	19,868.916
Karnataka	4,300.905	7,085.091	3,527.152	1,467.437	16,380.585
Kerala	88.127	94.238	111.672	123.277	417.314
Madhaya Pradash	3,514.900	3,245.557	3,757.700	3,709.200	14,227.357
Maharashtra	839.360	1,327.333	1,363.891	1,445.100	4,975.684
Meghalaya	72.699	130.918	NA	NA	203.617
Odisha	8,944.395	21,897.589	32,495.400	40,693.691	10,4031.075
Rajasthan	9873.085	11946.752	13001.630	14678.490	49,499.957
Tamil Nadu	1,305.653	1,452.388	2,208.114	NA	4,966.155
Total	44,697.485	78,891.658	93,455.479	92,387.874	309,432.496

Annexure 4: Percentage of complaints received through various modes by ACC from 2006 to 2015 concerning the mining industry



Annexure 5: Percentage of anonymous and known complaints received by ACC from 2006 to 2015 concerning the mining industry



Annexure 6: Complaints against Dzongkhags received by ACC from 2006 to 2015 concerning the mining industry





Annexure 7: Complaint against type of agencies received by ACC from 2006 to 2015

Annexure 8: Number of complaints in function of gender of the fraudster received by ACC from 2006 to 2015







Annexure 10: Complaints by types of mines/mineral received by ACC from 2006 to 2015 concerning the mining industry



Annexure 11: Complaints by area of corruption received by ACC from 2006 to 2015 concerning the mining industry



Annexure 12: Mining process complaints received by ACC from 2006 to 2015 concerning the mining industry



Annexure 13: Time taken for the processing of mine lease in Bhutan

Activity	As per regulation	Actual time taken
Decision on the acceptance of the application	8 weeks from the date of receipt of final application.	2-3 weeks from the date of application
Order concerning modification of application	8 weeks from the date of application	1-2 weeks from the receipt of application
Site visit for pre-feasibility study	Nil	1 month to 1 year from the acceptance of the application
Submission of the pre-feasibility study report	Nil	1-2 weeks from date of reaching the office from the site visit
Decision on the report by MLTC	Nil	1-3 weeks from the date of submission of the report
Letter to DLLC for seeking land and social clearance	Nil	1-2 weeks from date of reaching the office from the site visit
Processing in the Dzongkhag for land and Social Clearance	Nil	1-3 weeks from the acceptance of the report by MLTC
Processing in the Dzongkhag for land and Social Clearance	Nil	6 months to 4 years
Endorsement of DLLC report by NLCS	Nil	1 week-1month time
Issue of order to carry out geological and topographical survey	Nil	1 week time after the receipt of land clearance
Decision by MLTC on the Geological report	Nil	1-2 weeks from the date of submission of the report
Issue of order to prepare FMFS report	Nil	1-3 weeks from the acceptance of the geological report
Review and acceptance of FMFS report	Nil	1-3 months from the date of receipt of the report
Forwarding of FMFS report to NECS seeking the Environmental Clearance	Nil	1-2 weeks from the day of approval of FMFS report
Time taken for processing the Environmental Clearance	Nil	6 months to 2 years
Final approval from Ministry to sign the Lease Agreement	Nil	1-3 weeks from the date of receipt of EC

Annexure 14: CSR activities and plans by mining companies in India in 2013-14. Source: Ministry of Mines, Government of India, Annual Report 2013-2014

Mining company	CSR activity	Amount (in Rs. million)
1.National Aluminium Company Limited (NALCO)	 a. Operation of mobile health unit b. School education for tribal students c. Relief measures contribution (<i>Phailin</i>) d. Study through Center for Rural Energy and Water Access (CREWA) 	18.57
2. Hindustan Copper Limited (HCL)	 a. Livelihood b. Health, Hygiene and Sanitation c. Agriculture/Horticulture/Plantation d. Food & Nutritional Security e. Solar Energy Programme f. Water Management 	71.1
3. Mineral Exploration Corporation Limited (MECL)	 a. Maintaining sanitation and public health, b. Providing drinking water facility c. Promoting education of children, d. Providing sewing machines to the women belonging to weaker sections around MECL projects e. Energy management f. Carbon emission management g. Material and natural resource management. 	5.56

Annexure 15: Sample semi-structured interview guide for Dzongkhag (District) Land Lease Committee Chairman

Social talk: If any, exchange of business cards

Thank you very much for accepting to be interviewed.

I am XXX Researcher at RIM and I am doing a research about Business Environment of Mining in Bhutan. Despite being recorded, the interview is totally confidential and anonymous, and neither your name nor the name your organization will be used.

There is no right or wrong answer.

I want to have your perspective about the matter.

The interview is divided into 2 topics: first, I would like you to talk about yourself, and secondly on the Business Environment of Mining in Bhutan.

Questions

Yourself

1. Could you introduce yourself, so that I can understand your background and experiences in your field in order for me to understand what is your perspective on this topic is (if not given, ask for year of birth, probing questions year of graduation year, year of joining the civil service, qualification, year of getting the current position)?

- 2. Could you describe your organization and the Committee?
- 3. Could you explain how your organization is related in Mine processing and its operations?
- 4. What are your actual responsibilities as a Chairman of DLLC?
- 5. What are the main difficulties you face in verifying and processing for clearances for a mine application? What are YOUR difficulties in doing your job as a Chairman?
- 6. Who do you deal with during the time of processing the application for DLLC **Clearance from** your organization?

Business Environment

- 7. Please can you explain the processes involved to in DLLC clearance for mining.
- 8. What are the difficulties of your organization regarding processing for mining clearance?
- 9. Do you have check and balance mechanism to check on the committee members while processing for the clearance?
- 10. How is the decision usually made regarding the mining application?
- 11. Is there any situation where you cannot follow the formal processes of your rules due to lack of time and resources, please describe?
- 12. What do you think of Mining in Bhutan? What is your perspective on mining in Bhutan?
- 13. Some miners complain of lengthy process involved in various agencies. What is your opinion?
- 14. In agencies like yours, what are the problems concerning mining application?
- 15. With your experience what can be done to improve the processing of mining application? (Probing Is it a problem? Can you explain/give examples without giving names?
- 16. What guidelines/set of rules do you all follow while processing for clearance for mining? Please describe.
- Do you believe that social relationship may influence decisions on clearance process of mining? Please explain
- 18. Corruption is defined as "use of public power for private gain". In an agency like yours, what could be the type of abuse of power you could see?

- **19.** Could you describe a specific situation where abuse of power did influence the decisions without giving any name?
- 20. What could be the consequences of abuse of power, favoritism, nepotism (the words the interviewees use) in the process?
- 21. What could be the cost for our country of abuse of power, favoritism, nepotism (the words the interviewees use) influencing the decisions?
- 22. How could we evaluate this cost?
- **23.** Did you face with a situation where the mining promoters have asked for a favour from you while processing for the clearance? Please describe.
- 24. Has there been any case where the mining promoters have tried to bribe you to change your original decisions against the grant of clearance? Please describe.

Summarize key problems shortly and then

- 25. What could be the solutions to resolve (Abuse of power, favoritisms, nepotism) that you could propose?
- 26. What could be done practically to increase transparency in the clearance processes?
- 27. Are there any subjects that we have not covered but that you think are important in order for me to understand in relation with obtaining clearance and corruption? (warm and nice)

THANK YOU SO MUCH FOR YOUR PARTICIPATION

GLOSSARY

Abuse of Authority:	The abuse of authority is the improper use of a position of
	influence, power or authority by a staff member or non-staff
	personnel against another staff member or non-staff personnel
	or a group thereof
Accountability	Accountability denotes bearer of a right and relationship
Accountability.	hetwaan aganta or aganaiag ragnangihla for fulfilling or
	between agents of agencies responsible for furning of
	respecting that right. One basic type of accountability
	relationship is that between a person entrusted with a particular
	task or certain powers or resources, on the one hand, and the
	'principal' on whose behalf the task is undertaken, on the other.
Bhutanese Individual:	A natural born Citizen of Bhutan, or a firm holding a license
	issued by the Royal Government of Bhutan.
Bribery:	The act of taking or receiving something with the intention of
·	influencing the recipient in some way favorable to
	the party providing the bribe.
Captive Mine:	A mine from where the products are used as raw materials for
- · · · · · · · · · · · · · · · · · · ·	the specifically intended industries
Collusion:	secret agreement or cooperation especially for an illegal or
Conusion.	decaitful nurnose
Community	Community means where the nonulation is significantly affected
Community.	Community means where the population is significantly affected
	by a hearby mining operation. The community may be associated
	with the mining venture through direct employment or through
	environmental, social, economic or other impacts. The community
	can range in size from a city to a village. Community vary in the
	profile and perceptions about mining and needs.
Conflict of Interest:	Arises when an individual with a formal responsibility to serve
	the public participates in an activity that jeopardizes his or her
	professional judgment, objectivity and independence.
Corporate Responsibilities:	The degree of responsibility manifested in a company's
	strategy and operating practices (Waddock, 2004).
Corporate Social Responsibility (CSR):	"The subset of corporate responsibilities that deals with a
	company's voluntary/discretionary relationships with its
	societal and community stakeholders" (Waddock 2004)
Corruption	"An act which constitutes an offence under Chanter 4 of this
Corruption.	An act which constitutes an offence under Chapter 4 of this A_{at}
	Act (ACAB 2011, p.144). This definition is from the Anti-
	Corruption Act of Bnutan 2011. A common definition is given
	by the World Bank which defines corruption as "Abuse of
	public power for private gains".

Data Mining:	In this report, the overall process of discovering useful knowledge. The usual definition is the application of specific algorithms for extracting patterns from data (Fayyad, Piatetsky-Shapiro, Smyth, 1996).
Dzongdag:	Governor of a district.
Dzongkhag Tshogdu:	Refers to "District Council" which is the non-legislative executive body of the Dzongkhag.
Dzongkhag:	A Bhutanese term refers to a district.
Embezzlement:	Fraudulent taking of public property/fund for personal gain.
Forgery:	An act of promising, offering or giving an advantage to a public servant as an inducement to or reward for performing or abstaining from performing directly or indirectly any act in his or her capacity as a public servant.
Gewog:	Lowest administrative unit in Bhutan's three tiered governance system. A group of villages make up a Gewog and is translated as a block.
Gup:	A Gewog leader or head of the gewog elected by the people.
Integrity:	Adherence to a set of moral or ethical principles.
Mining Strategic Development Plan:	A "road map that determines the milestones of a journey towards building strong organization managed by dynamic and dedicated professionals and towards effective leadership" (ACC, 2011).
Strategic management:	The process of managing the mix of goals and strategic pathways that serve to define what the organization is, where it's going, when it wants to get there and how it is to get there (Finlay, 2000).
Strategic Minerals:	The minerals which have a very high value in its raw form and/or have very high economic and political impacts. These include gold, platinum, tungsten diamond, radioactive minerals, oil etc. Construction materials like stone and sand shall also be considered as strategic minerals.
Thromdey:	Municipality.
Thrompon:	Mayor.
Transparency:	Transparency refers an open decision-making based on sufficient information so that other agencies and general public can assess whether the relevant procedures are followed, consonant with the given mandate.

ACRONYMS

ACC:	Anti-Corruption Commission
ADB:	Asian Development Bank
BFAL:	Bhutan Ferro Alloys Ltd
BHU:	Basic Health Unit
BIT:	Business Income Tax
CD:	Current Deposits
CDA:	Community Development Plan
CEC:	Complaint Evaluation Committee
CEO:	Chief Executive Officer
CFO:	Chief Forest Officer
CIT:	Corporate Income Tax
CoI:	Conflict of Interest
CPI:	Corruption Perception Index
CSR:	Corporate Social Responsibility
CREWA:	Center for Rural Energy and Water Access
DME:	Darthang Minerals Export
DCCL:	Dungsam Cement Corporation Limited
DGM:	Department of Geology and Mines
DLLC:	Dzongkhag Land Lease Committee
DoC:	Department of Culture
DoFPS:	Department of Forest and Park Services
DPE:	Department of Public Enterprise
DT:	Dzongkhag Tshogdu
DzEO:	Dzongkhag Environment Officer
DzFO:	Dzongkhag Forest Officer
DzLRO:	Dzongkhag Land Record Officer
EC:	Environmental Clearance
FMFS:	Final Mine Feasibility Study
FYP:	Five-Year Plan
GDP:	Gross Domestic Product
GNH:	Gross National Happiness
GNHC:	Gross National Happiness Commission
GNI:	Gross National Income
GNP:	Gross National Product
GSI:	Geological Survey of India
HCL:	Hindustan Copper Limited
HRC:	Human Resource Committee
HRD:	Human Resource Development
HRM:	Human Resource Management

IMS:	Investigation Management System
INTOSAI:	International Association of Supreme Audit Institutions
IT:	Information Technology
DLG:	Department of Local Government
MECL:	Mineral Exploration Corporation Limited
MDP:	Mineral Development Policy
MLTC:	Mine Leasing Technical Committee
MMMA:	Mines and Mineral Management Act
MMMR:	Mines and Mineral Management Regulation
MoEA:	Ministry of Economic Affairs
MoWHS:	Ministry of Works and Human Settlement
MRA:	Mining Regulatory Authority
MSDP:	Mineral Strategy Development Plan
NALCO:	National Aluminium Company Limited
NEC:	National Environment Commission
NGO:	Non-Government Organization
NIA:	National Integrity Assessment
NLC:	National Land Commission
OECD:	Organization for Economic and Cooperation Development
PCAL:	Penden Cement Authority Ltd
PCG:	Public Consultation Guideline
RAA:	Royal Audit Authority
RGoB:	Royal Government of Bhutan
RIM:	Royal Institute of Management
RRCO:	Regional Revenue and Customs Office
SDP:	Strategic Development Plan
SMC:	State Mining Corporation
TADA:	Travel Allowance & Daily Allowance
UNCAC:	United Nations Convention Against Corruption