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**An Analysis of the Concept of ‘Sustainability’  
in Mining Agreements in Papua New Guinea:  
The case of Hidden Valley/Hamata Mine**

A thesis submitted in partial fulfilment  
of the requirements for the degree  
of

**Master of Social Science  
in Public Policy**

at

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by

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## **ABSTRACT**

This thesis examined the way in which notions of economic, social and environmental sustainability were addressed in mining agreements in Papua New Guinea (PNG), through a case study of the Hidden Valley/Hamata mine. The thesis offered a discussion of indigenous and western perspectives on economic, social and environmental perspectives and practices. It then developed a model of sustainable development drawn from the scholarly literature and applied it to the case study.

The thesis explored the extent to which principles of sustainable development were incorporated into the mining agreement, as well as in negotiations amongst key actors. The study analysed key documents relating to sustainable development in PNG, including relevant national legislation and the memorandum of agreement negotiated amongst the principal actors in the Hidden Valley/Hamata mine. In addition, interviews and focus groups with the main participants in the Hidden Valley/Hamata case were also analysed. The analysis revealed significant deficiencies in the understandings of issues around sustainable development among all actors, which affected the negotiations of the mining agreement. The dominant concern for all actors, reflected in the analysis of documents and interviews, was economic. Furthermore, indigenous perspectives on sustainability were not given a hearing in the negotiations.

The study demonstrated that the major power differences between government and the mining company, on the one hand, and the landowners, on the other hand, prevented meaningful participation of the affected villagers in the negotiation process. The contradictory role of the state as both the regulator of the mining company and its partner in the mining development, along with a lack of awareness about issues of sustainable development, adds to the difficulty of implementing the provisions of the Environment Act. The thesis concludes by developing an analytical framework for negotiating sustainable development in mining agreements through incorporating indigenous and western perspectives

and practices of economic, social and environmental sustainability in development projects.

The significance of this research is that it addresses a gap in the literature on sustainable development with specific reference to mining in PNG. It offers insights into the negotiation process of mining agreements and offers a framework for negotiating sustainable development in practice in the future.

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## **ABBREVIATIONS**

AIDS	Acquired Immuno Deficiency Syndrome
BHP	Broken Hill Proprietary
BPNG	Bank of Papua New Guinea
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
IMF	International Monetary Fund
ILGs	Incorporated Landowning Groups
IPA	Investment Promotion Authority
IUCN	International Union for Conservation of Nature and Natural Resources
LLGs	Local Level Governments
MCG	Morobe Consolidated Goldfields
MMJV	Morobe Mining Joint-Venture
MOA	Memorandum of Agreement
MPG	Morobe Provincial Government
NGOs	Non-Governmental Organisations
NKW	Nauti, Kwembu, Winima
NLA	NAKUWI Landowners Association
PNG	Papua New Guinea
SSG	Special Support Grant
UNDP	United Nations Development Program
WWF	World Wildlife Fund

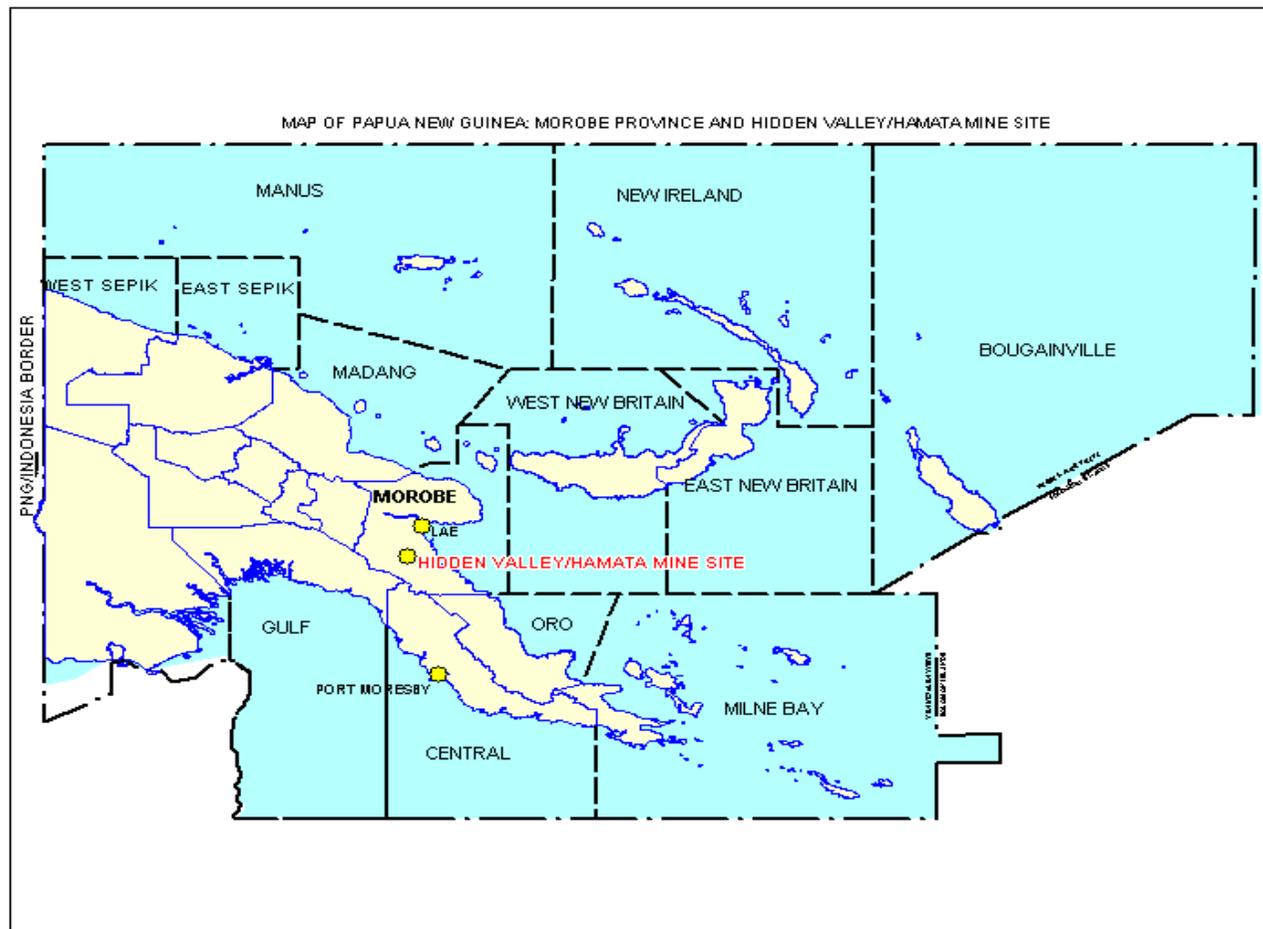


Figure 1. Map of Hidden Valley/Hamata mine site  
(Source: Edwin Nidkombu. Used with permission)

# CHAPTER 1 INTRODUCTION

## 1.1 Background to research

Papua New Guinea (PNG) is experiencing a mineral resource boom, but this has had little positive impact on the growth of the economy and the lives of the majority of its rural citizens. In fact, mining in PNG continues to raise many environmental, social and economic concerns that government and private sector stakeholders have to date failed to address. More than anything else, the current conduct of mining in PNG raises serious questions about the possibility of achieving sustainable development.

The process of developing a mine places indigenous landowners in a vulnerable position whereby they can no longer sustain their rural, traditional subsistence economy. Mineral extraction necessarily destroys the environment through damage to forests and pollution of rivers, which in these regions are an integral part of the subsistence economy. Landowners' livelihoods are therefore compromised by mining activities. Furthermore, the associated environmental degradation has in the past led to great conflict. For example, the Bougainville copper mine ceased operations in 1989 due to a landowner uprising over the destruction of the environment during mining operations (Havini & Johns, 2001). The Ok Tedi gold mine has also been accused of environmental destruction by landowners, but still operates today (Pintz, 1987; Johnston & Jorgensen, 1994; Swales et al, 1998; and Hettler, Irion & Lehmann, 1997). The closure of the Bougainville copper mine resulted in the PNG government having difficulties in running the country because Bougainville was such a major source of revenue. Since then, the PNG government has looked for other mining opportunities as well as the logging of tropical timbers for export.

It was in large part these types of issues which led to the conflict in Bougainville in 1989, and conflict among landowners, and between landowners, the mining corporations and mine workers continues. This is illustrated in the following report in the PNG newspaper, *The National*, which stated that "operations at

Ramu nickel mine in Madang have been disrupted after locals attacked Chinese workers” (Kaut, 2008, p.1). Another example was a clash between the ‘NAKUWI’ landowners and mine labourers from the Highlands region of PNG (Bonai, 2008). Conflict associated with mining, with many landowners claiming that their rights are being trampled upon and their livelihood threatened, continues to be a very serious issue affecting the life of the local people. Landowners have conducted strikes and protests to vent their frustration in areas like Tolukuma mine in Central Province, PNG (Walton & Barnett, 2008). Further, the development of mines has typically been accompanied by significant social costs including the breakdown of social structures and new problems such as alcoholism and the spread of HIV/AIDS.

A major challenge, then, is to find environmental, social and economic sustainability outcomes in a way that meets the aspirations and needs of indigenous stakeholders. This raises the question of the meaning of sustainable development. Since the 1980s there has been growing international recognition of the adverse effects of economic growth on the environment and society and this has led to a discourse on sustainable development. Sustainable development, like the notion of sustainability itself, is a multi-disciplinary concept (Pezzoli, 1997). Meaningful definitions of sustainable development seek to reconcile the desire for economic growth and environmental sustainability (Dryzek, 1997, 2005). First promoted by the World Conservation Strategy in 1980 (IUCN, 1980), the discourse of sustainable development emphasizes the need to recognise the interdependence between ecological protection and economic development. Broadly speaking, sustainable development is an umbrella concept advocating the maintenance of social, economic and environmental values through development. As a policy goal, it has been embraced by many of the so-called developing and developed countries. Serious questions remain regarding the extent to which sustainable development can be realised in practice, especially where mining is concerned. As mineral resources are non-renewable, relying on these resources for an indefinite period begs the question of how sustainable ‘total’ resource extraction is versus retention of arable land (the pre-mining landscape).

Addressing these questions requires an appreciation of the competing interests of stakeholders, these being landowners, mining companies, the national government and the provincial governments. It is the extraction and the exportation of mineral resources that is the main source of revenue for the government, contributing forty percent of the GDP (Ballard & Banks, 2003). Multinational mining companies like Placer Dome, Harmony Gold Limited, and Metallurgical Corporation of China, and Malaysia's logging giant Rimbunan Hijau are currently operating in PNG (PNG Chamber of Mines and Petroleum, 2002). They are often described within the existing government laws as partners with the government in the development of the country's natural resources (see Section 16A of the Mining Act 1992, Section 43 of the Forestry Act 1991 and Section 165 (1) of Oil and Gas Act 1998).

The contradictory role of the state in mining is recognised by some scholars as a fundamental source of conflict (Johnston & Jorgensen, 1994; Jorgensen, 2006; Banks, 2002). Since Independence in 1975, the copper and gold mines at Bougainville and Ok Tedi were a major source of revenue for the government. In 1992, the Papua New Guinean government adopted its new Mining Act and allowed foreign companies to develop and export mineral resources. The government claims all mineral resources in PNG, Section 5 of the Mining Act stating clearly that: "All minerals existing on, in or below the surface of any land in PNG is the property of state" (Haynes, 1994, p.31). The government through this Act manages to control most of the wealth generated through mineral extraction and exportation. Many landowners believe that through the process of granting mining licences, their landowning rights are not being respected and that they are not being adequately compensated for the damage to their land (Golub, 2006). They have argued that the government should not continue to fast track projects which are springing up across PNG (Kaut, 2008), and it should not be endorsing agreements without fully considering both landowner rights and the long-term impacts these projects will have on the people and the country as a whole.

The existing government policy on mining, however, does require a Memorandum of Agreement (MOA) to be signed between the primary stakeholders, namely, the

landowners, mining companies, the national government and the provincial governments. There has been little research into the nature and effectiveness of these agreements and their potential to protect the interests of landowning communities. In particular, there has been no research examining whether and to what extent sustainable development is acknowledged as central to mining negotiations in recent times. This thesis addresses this issue by asking:

**How well is the notion of ‘sustainable development’ addressed in the mining agreements in PNG?**

In this thesis, this question is examined through an analysis of the case of the Hidden Valley/Hamata mine. A mining agreement (i.e. MOA) between the major stakeholders of the Hidden Valley/Hamata mine for extraction of minerals was signed in August 2005. This research will examine whether concerns for economic, environment and social sustainability were addressed in that agreement. Specifically, the research seeks to address the following questions:

- 1. What are the primary actors’ views, beliefs, and principles about sustainable development? In what ways do they differ or are the same?**
- 2. How do the ‘NAKUWI’ Landowners, Morobe Provincial Government and Morobe Mining Joint-Ventures negotiate issues of economic, environmental and social sustainability in the Memorandum of Agreement (MOA)?**
- 3. Which views, beliefs, and principles on sustainable development are retained in the final settlement contracts? Which principles are given importance or priority over others? Which principles are lost or kept off the agenda in translation? How and why are they lost?**

These questions will allow the exploration of the extent to which notions of sustainable development are given legitimacy in practice with regard to mining in PNG.

## **1.2 Brief background of Papua New Guinea**

PNG is a Pacific Island state with abundant natural resources. PNG is characterised by significant ethnic and language diversity, with approximately 800 ethnic groups and languages. Eighty-seven percent of the PNG population lives in rural areas and practises subsistence farming (United Nations, 2007, p. 11). PNG is listed number 139 of 177 countries by UNDP in its 2006 Human Development Index Report (UNDP, 2006) and faces significant development challenges such as addressing issues of poor infrastructure, urban poverty, and law and order problems. This is exacerbated by population growth rates of “2.7 percent on a total population of approximately 5.3 million,” a rate significantly higher than other Pacific countries like Fiji and the Solomon Islands (United Nations, 2007, p.12). The country trades a few cash crops like coffee, tea, palm oil, cocoa and copra, but the heart of the country’s economy, that maintains the bulk of the rural population, is rooted in traditional agriculture and hunting. The mining of minerals, though, has begun to play an increasingly important part of the economy (PNG Chamber of Mines and Petroleum, 2002). The Bank of Papua New Guinea policy statement of 31 July 2008 shows that at that time the inflation rate was 9.0 percent and the GDP growth rate was 7.6 percent (BPNG Monetary Policy Statement, 2008, pp. 9-10). In terms of social indicators, the “adult literacy rate [is] 57.3 percent, GDP per capita [is] US\$2,543 and life expectancy [is] 55.7 years” (United Nations, 2007, p. 11).

In the pre-colonial era, Papua New Guineans organised themselves into clan systems and practised subsistence agriculture. The practice of shifting cultivation, an agricultural method used for making gardens and preserving forests for later use, reflected the sustainable management of resources. Plants and crops were grown for local consumption, goods were exchanged for goods (barter system) and no cash was used (Kaitilla, 1994). This is very different from the Western capitalist economic system. Since the introduction of a cash economy during colonial times, significant changes in land use have taken place (Kaitilla, 1994). The pre-colonial institutional structures were based on clan systems and principles of collectivism, and goods were shared among clan members and the tribe.

Decision-making and the settling of disputes were based on clan system processes and on achieving consensus among clan members.

However, the processes of collective decision making are undergoing fundamental change. During the colonial era from 1884-1975, a liberal democratic system of government was introduced by Australia. As a former colony of Australia, PNG now has the Westminster model of government based on the principles of liberal democracy. PNG gained independence from Australia in 1975, and the liberal democratic system of government that has developed, alongside a capitalist economy, is oriented towards encouraging more economic growth and allowing individual citizens to accumulate wealth and pursuing self-interest. This is counter to traditional clan-based, collectivist values. Further, in the current system of clan organization, only the 'Chairman' of the landowner association is allowed to make decisions on behalf of the clan and the tribe on issues such as mining and forestry, unlike in the pre-colonial period, where decisions about the land were made based on collective consensus. Thus, decisions for projects like mining and forestry now tend to be made on the basis of economic reasons and these tend to overshadow and neglect the collective conscience of pre-colonial ideals that allows for protecting the environment (Kaitilla, 1994).

### **1.2.1 Landownership conflicts in mining in PNG**

In PNG, land is 'communal', in the sense that it is owned by a clan rather than by individuals. Kaitilla (1994), points out that the land ownership system in PNG means the land belongs to the dead, the living and the unborn. The clan is not hierarchical and decisions about the land have historically been made as a group. Decisions about the use of land in PNG has traditionally been reached through obtaining a mutual understanding between the clan members. The composition of clan members may vary and most landowning practices in PNG are patriarchal in nature, while in a few areas it is a matriarchal system. These two differing land inheritance systems determine the use of land in most rural communities.

The idea of traditional landownership in PNG imposes responsibilities to defend and look after the land (Kaitilla, 1994). It includes assumptions that mineral resources and other natural resources on the land were owned and managed by the indigenous people. However, Section 5 of the current PNG Mining Act 1992 states quite clearly that minerals belong to the state.

Traditional land ownership and land use systems are therefore changing. In order for a company to mine minerals in a particular area, the 1992 Mining Act and the Oil and Gas Act 1998 requires that the company has to conduct social mapping for the particular area before applying for a mining and petroleum development license. The main reason for social mapping is to identify the real owners of the land where the mining will take place. It is also required to assess the values, beliefs and land tenure system of the area in regards to the land and environment (see Section 108(2) of Mining Act 1992 and Section 47 of Oil & Gas Act 1998) and how people understand sustainability and environment (see Section 5 a, b & d of Environment Act 2000). The 1992 Mining Act and 1998 Oil and Gas Act also requires that after the identification of the real owners of the land, these landowners have to form Incorporated Landowning Groups (ILGs) and register with Investment Promotion Authority (IPA) to deal with the government and the developer. Only the registered ILGs may represent the landowners and deal with the government and the company.

The increasing demand for land for mining has thus produced fundamental changes in the way decisions about the use of land are made (see Kaitilla, 1994; Haynes, 1994; Hyndman, 2001; Banks, 2002; Sillitoe & Wilson, 2003; Macintyre & Foale, 2004; Golub, 2006; Macintyre, 2007; Jorgensen, 2006; Banks, 2008 and Walton & Barnett 2008). Notably, authority has been increasingly bestowed on the individual 'chairmen' of landowning associations, leading to disagreements within clans regarding land use. In the past, decisions about the uses of land for activities such as gardening and hunting were made through a process of reaching a mutual understanding. Under new legislation, landowning organisations represented by a chairman are the institutionally recognised authoritative voice of the clan.

This raises questions about informed consent by clan members over land use. Golub's (2006) study of the Ipili people of Enga province has found political and practical problems associated with gaining informed consent for mining projects in PNG. Mining companies are required to inform the local people about the scale of the project and the extent of loss, damage, and destruction to their environment as they seek informed consent (Macintyre, 2007; Macintyre & Foale, 2004). Landowners in PNG have welcomed the idea of 'informed consent' which includes ensuring they are made aware of the negative impact of mining. But landowners have been found to have divided preferences, between the ability to become consumers in a cash economy or to continue to act as a citizen to protect the environment (see Sagoff, 1988). The immediate cash benefits from the mining are driving many Papua New Guinean landowners to sign mining agreements (MOA) with mining companies to extract minerals from their land, as has been the case in Bougainville, Misima, Ok Tedi, Porgera and other existing mines (see Johnston & Jorgensen, 1994; Golub, 2006; Gedicks, 2001; Imbun, 2007; Kirsch, 2003; Havini and Johns, 2001 and Hyndman, 2001).

Decisions about mining, then, have become an important cause of many land disputes. Perceptions about inequality in the distribution of land compensation payments by mining companies have become one of the major sources of disagreement among clan members, especially in an environment where compensation for environmental damage has become a new form of land rent and a new way of making money (Macintyre & Foale, 2004). In fact, some scholars argue that most of the conflict has not really been over the loss and degradation of the land, but the unequal distribution of royalties and environmental compensation payments (Walton & Barnett, 2008).

### **1.2.2 Mining and environment in Papua New Guinea**

The main problem associated with mining activity in PNG is described as the significant environmental degradation that occurs as a consequence of the mining (see Johnston & Jorgensen, 1994; Kirsch, 2003; Hettler, Irion & Lehmann, 1997; Swales, 1998; Macintyre & Foale, 2004; Hyndman, 2001; Stevens & Owens,

1998; Banks, 2002). This is something about which even BHP, the mining company at Ok Tedi mines, agrees (Banks, 2002). An example of this is the damage to the Fly River system. Due to geotechnical challenges, there are no waste retention facilities at the Ok Tedi mine and all the ore processing residues, waste rocks, and overburden are discharged into the Ok Tedi River, a mountainous tributary of the Fly River system (Hettler, Irion & Lehmann, 1997). The long-term decline in fish catches downstream of the mine reflect adverse environmental impacts arising from the discharge of mine effluents on the Fly River system (Swales et al, 1998). Such environmental problems have devastated the life of the indigenous people living along the Fly River system (see Hyndman, 2001; Gedicks, 2001). Other studies by marine biologists about the river system (Hettler, Irion & Lehmann, 1997, Swales et al. 1998) support this conclusion and point to the potential for the extinction of some of the fish species. Discharging mine waste into the ocean and the river system continues to be the common method used by mining companies in PNG. A study of the Ok Tedi mine's pollution of the Fly River system, drawing on data from an independent German researcher, demonstrated that the level of toxic waste from the mine greatly exceeded the European Union standard (Johnston & Jorgensen, 1994).

The question arises as to what the government and the mining company are doing to control the pollution of the river system. There is a requirement in the Environment Act of 2000 that mining companies have to provide an Environmental Impact Assessment (EIA) report to the government through the Department of Environment and Conservation before granting a mining license (Section 51, Environment Act 2000). The EIA report requires mining companies to provide information on how mine waste will be controlled and managed. Mining companies have to state clearly how the mining activities will affect the environment. And based on the experiences of the existing mines, the 1992 Mining Act also emphasises the "building of tailing dams" for new mining projects in PNG (Section 41b, Mining Act 1992). The company also has to provide a mine closure plan that makes clear how it will fix up the mess created after the mine is exhausted. To date, though, it would appear that the state has failed to enforce this requirement, although there is a critical need to take action.

Arguably, the environmental problems caused by mines are not readily addressed because of the state's contradictory role as both custodian of the land and as a partner in resource projects. For example, BHP, the mining company that owned Ok Tedi mine at that time in partnership with the PNG government, has not been required to do anything to stop the pollution of the Fly River system.

Instead, it has become common for mining companies to pay huge sums of money as compensation for environmental damage to diffuse the local landowner grievances about the negative impact of mining activity on their environment (Gedicks, 2001; Kirsch, 2003; Kirsch, 2007; and Macintyre & Foale, 2004). So, for example, BHP has spent 400 million Australian dollars for the environmental damage to the Fly River system (Gedicks, 2001, p.113). When confronted with such damage and the associated social disruption caused by mining, therefore, many landowners have resorted to both claiming for and accepting compensation payments from mining companies (Gedicks, 2001). However, the current compensation policy in PNG for environment and human rights protection is described by Kirsch (2003) as inadequate and landowners continue to take legal action against mining companies (Kirsch, 2007).

### **1.2.3 Mining and development in Papua New Guinea**

The PNG government's policy of exploiting mineral resources and absorbing environmental cost was enacted as a means of obtaining revenue for financing national development (see Johnston & Jorgensen, 1994). Mining in PNG normally takes place in isolated areas where the local landowners live on hunting, fishing and gardening. As such, the mining companies bring the process of modernization which has an enormous impact on local landowners (see Johnston & Jorgensen, 1994; Banks, 1993; Hyndman, 2001; Banks, 2002; Banks, 2008; Jorgensen, 2006; Imbun, 2007; Sillitoe & Wilson, 2003; Jorgensen, 2006; and Golub, 2006). Clearly, mining has advanced the cash economy and the notion of capitalism in the small-scale agricultural society of PNG. Mining companies also build infrastructure and provide basic services like health and education to the rural communities, these requirements often being built into MOAs. The company may

also be required, depending on the MOA, to provide services in areas where the state is unable to deliver them (Banks 1993, 2008). Mining companies can be seen, therefore, to bring socio-economic development and change, and have helped to improve the educational qualifications, job specialisation, wage levels and patterns of accommodation for many Papua New Guineans (Imbun, 2007).

However, as mining companies become involved in service provision, the state has no incentive to develop such services. Though mining threatens to destroy the established social structures, and commitments of kinship, friendship and ethnicity in the PNG rural communities, it also helps to improve their general wellbeing as mineral resources account for most of the country's income. State finances depend on revenues generated by resource projects, and policy governing such matters has become a key focus of national political debate (Banks, 2008).

### **1.3 The research, its rationale and significance**

This thesis investigates the complex relationships between stakeholders in mining decisions in PNG. In particular, it examines how competing understandings of sustainable development are incorporated into the MOA negotiations between the 'NAKUWI' Landowners' Association of Morobe province and the mining corporation, Morobe Mining Joint-Ventures. The mining agreement was signed in August, 2005. The Hidden Valley/Hamata mine is a new project and it provides an opportunity to examine how economic, environmental and social concerns are addressed prior to resource extraction. It also provides an opportunity to consider whether the experiences of other mining ventures have had any influence over the negotiation for sustainability in the agreement signed for Hidden Valley/Hamata project. In particular, the research examines whether issues of sustainability have been given any legitimacy in the negotiations over the Hidden Valley/Hamata mine.

The study thus explores how the concept of sustainable development is viewed and understood by 'NAKUWI' Villagers, NAKUWI Landowners Association Committee's, Morobe Provincial Government officials and Morobe Mining Joint-

Ventures employees. The ‘principal landowners’ of the Hidden Valley/Hamata mine are the villagers of Nauti, Kwembu and Winima in Morobe Province. Landowners are made up of the Watut and Biangai tribes (see Burton 1996a, 1996b; Halvaksz, 2003, 2006). Nauti village is from the Upper Watut tribe whilst Kwembu and Winima villages are from the Biangai tribe. These are rivals claiming ownership of the land of the Hidden Valley/Hamata mine. The final decision about the land was made in 1987 recognising both tribes as the legitimate owners of the land at Hidden Valley/Hamata mine. The Provincial Land Court awarded 50 percent ownership to Nauti village of Upper Watut and 25 percent each to Kwembu and Winima villages of Biangai tribe (see Burton, 1996a, 1996b). NAKUWI Landowners’ Association (NLA) represents the landowners of Hidden Valley/Hamata mine. The name “NAKUWI’ comes from the first two letters of the names of the three landowning villages of Hidden Valley/Hamata mine: Nauti, Kwembu and Winima. NAKUWI Landowners Association was regarded as the legitimate ILG to represent the landowners of Nauti, Kwembu and Winima villages in negotiating the mining agreement signed.

Morobe Mining Joint-Ventures is the developer of Hidden Valley/Hamata mine. Formerly, the mining company was Harmony Gold Limited, but Newcrest Mining Limited joined with Harmony Gold Limited and they formed MMJV. Harmony Gold Limited is a South African-based company and Newcrest Mining is an Australian-based company. They have three companies that come under the joint venture; these are Morobe Exploration Joint-Venture, Wafi/Golpu Joint-Venture and Hidden Valley/Hamata Joint-Ventures. These are three different companies that make up Morobe Mining Joint-Ventures.

Hidden Valley/Hamata mine is located in Wau/Bulolo district of Morobe province. Morobe Province is one of the provinces in PNG with Lae as the provincial capital. It has 9 districts, 33 Local Level Governments and 565 wards (Esonu, 2005). As such, the Morobe Provincial Government is a major stakeholder of Hidden Valley/Hamata project.

The focus in this research on mining agreements is to understand how economic, environmental and social development concerns are addressed in the negotiations

by the different actors, and to examine whose knowledge is validated in the final agreements that are signed. It is vital for indigenous people to understand the development benefits and environmental problems associated with mining activities. The view that NAKUWI Villages, NAKUWI Landowners Association Committees, Morobe Provincial Government and Morobe Mining Joint-Ventures have 'divided preferences' over the understanding and interpretation of the concepts of 'sustainability' and 'development' is examined (see Sagoff, 1988). This research therefore explores the nature and extent of the understandings of sustainable development in the context of new mining ventures in PNG through a case study of the Hidden Valley/Hamata project.

This inquiry involves an analysis of official documents: the Environment Act (2000), the Mining Act (1992) and the MOA signed by 'NAKUWI' landowners of Hidden Valley/Hamata mine, National Government, Morobe Provincial Government and Morobe Mining Joint-Venture's. The research also draws on interviews with key actors involved in the negotiations on the mining contract, including company employees, landowners' association committees, individual landowners, and Morobe provincial government officials.

The analysis is framed by a concern with sustainable development. This research examines the extent to which the goals of sustainable development are articulated in mining agreements in PNG, and how effectively they reflect the views and beliefs of the indigenous people. Given the recent development of the concept, though, can we expect PNG to be fluent in the idea and ensure useful negotiation? Mining is, of course, never sustainable; it irreparably alters the landscape which will never be the same (Dryzek, 1997, 2005). Yet much can be done to minimize the damage from mining. Do 'NAKUWI' landowners know this? It is obvious that they know what will happen to their land based on examples of other existing mines in PNG but what drives them to pursue the mining project in their area? This question is explored in this thesis.

This study is important for PNG because the current global mineral resource boom is encouraging rapid economic growth with concomitant impacts on the country's environment. The previous experiences of indigenous people with

mines set up on their land, including Bougainville and Ok Tedi, highlight how conflicts between landowners and mining companies arise. That conflict is principally related to dramatic environmental degradation at the expense of local economic and social wellbeing (Jorgensen, 2006). The lessons learned from existing mines are important for major stakeholders of new mining projects in PNG and should be dealt with transparently. The case of the 'NAKUWI' landowners and Morobe Mining Joint-Ventures assists in explaining or better understanding existing social, economic and environmental concerns. The study will also provide a basis for making policy recommendations about sustainability in the mining agreements in PNG.

## **1.4 Methodology**

A qualitative research method is used to investigate how notions and practices of sustainability and development are incorporated into negotiations between 'NAKUWI' Landowners Association and Morobe Mining Joint-Ventures. The purpose of the qualitative research in this study is to determine economic, environmental and social outcomes expected by the stakeholders during and following the use of the mine, and analyse whether they reflect understandings of sustainable development.

It is also important to understand the philosophy underpinning the methodology used here to justify the research problems. A phenomenological research paradigm is used because the study is subjective in nature and the researcher is from Morobe Province, PNG. Lincoln and Guba (1985) coined the term 'human-as-instrument' to illustrate the unique position taken by a qualitative researcher and they refer to this within the concept of "indwelling." The concept of indwelling sets out the idea of insider versus outsider involved in this research. In this research, the researcher is a Papua New Guinean insider and there is no outsider bias for this research. 'Human-as-instrument' means that it is the person with all of her or his skills, experience, background, and knowledge as well as biases is a primary, if not exclusive, source of all data collection and analysis (Maykut & Morehouse, 1994).

The following methods of data collection are used for this study: (1) in-depth interviews; (2) focus group or group interviews; and (3) analysis of the official documents and the Memorandum of Agreement (MOA). This focus of data collection is really people's words, ideas and actions. The interview data was collected in the form of field notes and audio- taped interviews, and transcribed for data analysis. Previous research, official documents, in-depth interviews and focus group interviews are an ideal way of collecting data in PNG's rural setting. The details of methodology are discussed in the next chapter.

## **1.5 Brief outline of the thesis**

The thesis comprises of five chapters as discussed below.

Chapter one of the thesis is the Introduction, explaining the context of the study, the aim of the research, research questions, rationale and significance of the research, brief background of PNG, methodology and the brief outline of the chapters in this thesis.

Chapter two of the thesis offers a discussion of the theoretical framework and methodology. The theoretical framework is grounded in the literature on sustainable development and environmental security. The methodology section offers an explanation of the justification for a case study what methods were used and why; when and where the research took place; how access to the data and subjects were obtained; the selection process for the participants; the procedures chosen; and the limitations of the methods employed.

Chapter Three is a substantive chapter that undertakes an analysis of documents. The Environment Act (2000), the Mining Act (1992) and the MOA for Hidden Valley/Hamata project are analysed. The analysis categorises the main themes in the MOA under the three pillars of sustainable development: economic, environment and social. Chapter Four is the second substantive chapter based on analysis of interviews with the major stakeholders involved in the Hidden Valley/Hamata project. Chapter Five is the Conclusion and reviews the

contributions of this research to scholarship, while also identifying implications for future research.

# **CHAPTER 2 THEORETICAL FRAMEWORK AND METHODOLOGY**

## **2.1 Introduction**

The primary aim of this thesis is to analyse the extent to which concerns regarding sustainable development have been incorporated into recent mining agreements in PNG, with specific reference to the case of Hidden Valley/Hamata mine. This chapter explores the concept of sustainable development that frames these concerns. In discussing the broad context of sustainable development, specific attention is given to issues of mining and environment from 1990 to the current day.

This chapter offers a review of the relevant literature and an overview of the competing concepts of sustainable development. It is divided into five main parts:

- 1) Sustainable development in the existing literature
- 2) The notion of environmental security
- 3) Perspectives on sustainability
- 4) The sustainable development model for this study and
- 5) The methodology for this study.

## **2.2 Sustainable development**

Sustainability and sustainable development are multi-faceted concepts with many meanings. Review essays of sustainability and sustainable development have shown that their meanings are discipline focused with no one universal definition of the two concepts (see Jabareen, 2008, 2004; Pezzoli, 1997). For example, where the ecological sciences may define sustainability as sustaining ecology and environment, economics may view it more as sustaining economic growth while reducing the cost to the environment. The concepts may best be regarded as umbrella concepts that link economy, environment and society. Despite criticisms about the looseness of the term, sustainable development still stands out as the

dominant discourse of ecological concerns in the world (Dryzek, 1997) that brings together concerns for the environment, economy, and social justice. Hence, it is particularly relevant to see the extent to which sustainable development is a clear focus in the mining agreements in PNG. Mining projects in PNG threaten livelihoods of many rural Papua New Guineans, who depend on their land and environment, while holding out the promise of economic growth to the country as a whole.

Whilst a clear definition of sustainability and sustainable development is elusive, the following definitions are used for this research as they are the most relevant. As defined by Pearce & Turner (1990), sustainability is “maximising the net benefits of economic development, subject to maintaining the services and quality of natural resources over time” (Pearce & Turner, 1990, p.24). For the International Union for Conservation of Nature (1991, p.10), sustainable development is “development that improves the quality of human life while living within the carrying capacity of supporting ecosystem”. The most popular definition of sustainable development was offered by the World Commission on Environment and Development (1987, p. 8), as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

In order to understand the concept of sustainable development, it is important to recognise what development means. Development is a concept that is most commonly identified with economic growth. In the context of development as economic growth, the ‘environment’ has traditionally been understood as comprising natural resources that can be utilised for the benefit of humans. However, as traditional models of development lacked a concern for the environment, it led to the creation of a new development model, ‘sustainable development,’ which gained prominence since the late 1980s (Haque, 2000).

Sustainable development discourse and practice deal with economic, environmental and social concerns. Any meaningful definition of sustainable development will need to “reconcile the competing values” of development and environment (Dryzek, 1997, p.161). Sustainable development promotes

responsibility as well, where everyone practising sustainable development is seen to be responsible for their actions. Sustainable development is also firmly about equity and justice, which is why it remains a powerful concept in thinking about environment and development (Dryzek, 1997, 2005).

Sustainable development as an ideal model has much to offer most developing countries. A developing country's capacity to practise sustainable development, however, is hampered by many factors. Hecht (1999) points out that factors such as domestic policy, the monetary lending policies of international financial institutions (e.g., the IMF and the World Bank), and investments by the private sector, all impede the practice of sustainable development in developing countries.

At the same time, governments of developing countries are under pressure to grow their economies. Many governments depend on exploiting non-renewable resources for the generation of revenue and this leads not only to the depletion of those resources but also destruction of the surrounding environment. This, in turn, has specific implications for indigenous peoples and rural communities who tend to depend heavily on their environment for sustenance and the necessities of life.

In my analyses of how economic, social and environmental sustainability are related in mining negotiations and agreements, I ask firstly whether a mining project can be sustainable? According to Dryzek (1997), mining is never sustainable. Why then choose sustainability and 'sustainable development' as the framework for this study? The notion of sustainability and sustainable development is important because most rural Papua New Guineans depend on their land and environment for survival. It is clear that mining projects directly affect the ecosystem and destroy the natural environment. Forests are cleared, fertile soil is removed, rivers are polluted, and the livelihood of indigenous people is threatened. In PNG, mining projects have had devastating effects on the lives of indigenous people and their natural environment.

The negative effects of mining, such as environmental degradation and social disruption, cause tension between different actors involved in the mining projects. As Ballard and Banks (2003) point out, the "relationships between different actors

within the broader mining community have often been characterised by conflict, ranging from ideological opposition and dispute to armed conflict and the extensive loss of lives, livelihoods, and environment” (p.289).

It is evident that, “conflicts over access to natural resources have erupted throughout the world” (Herrold-Menzies, 2006, p.383). The conflict over natural resources in PNG seems inevitable given global demand for them. Landowners are increasingly aware of this and have responded by seeking greater control over their resources. It is the popular view in PNG that those who own the land own everything below and above the land and this is in large part a cause of the conflict between the state and the landowners. Further, 97 percent of the land in PNG is owned through traditional titles by clans. The state owns only three percent, this mainly in the urban centres. Most of the mining activity in PNG is on traditionally owned land, hence the conflict between the state and the landowners. Tensions arise because local landowners claim that they are the legitimate owners of the mineral resources on their land and not the state, in contradiction of the 1992 Mining Act. The case of Bougainville is an example where this conflict between the state and the local landowners became violent (see Filer 1990; Denoon, 2000; Havini & Johns, 2001).

Though mining has negative effects on the natural environment, most Third World states now engage in natural resource extraction as it is seen as the main driver of economic development. PNG is no exception as its economy depends very much on the extraction of its mineral resources (Bank of PNG, 2008). Therefore, negotiating sustainability in terms of environment and development in the new mining agreements in PNG is paramount if we wish to avoid environmental destruction and social conflict. In this context the literature on ‘environmental security’ is particularly relevant to understand issues around mining and resource exploitation in PNG.

## 2.3 Environmental security

Environment and security are two distinct concepts that have a complex relationship. Both are entrenched in the environmental problematique. The dominant perspective in the scholarship is that environmental degradation causes environmental scarcity, which leads to violent conflict (see Homer-Dixon, 1994). Homer-Dixon (1994) argues, for example, that “high population densities in these areas, combined with a lack of knowledge and capital to protect local resources, cause severe environmental damage and chronic poverty” (p. 294). In contrast, scholars such as de Soysa (2005) put forward “the honey pot theory,” where resource abundance leads to fights over the honey pot. De Soysa (2005) argues that, “A large per capita availability of mineral wealth raises the risk of civil war, while greater availability of renewable resources has no effect on conflict” (p.160).

The idea that resource abundance and environmental degradation pose a threat to national security has relevance for PNG. The experiences of Bougainville and other existing mines demonstrate that environmental degradation caused by exploitation of resources causes violent conflict. In the case of the Bougainville mine, local landowners took up arms against the company and the government because of environmental degradation (see Filer, 1990; Denoon, 2000; Havini & Jones, 2001). In the case of the Ok Tedi mine, local landowners formed a popular ecological movement and sued the mining company for environmental damage (see Gedicks, 2001; Kirsch, 2003; 2007). Thus, both resource scarcity and resource abundance are seen as triggers for conflict.

Clearly, having abundant resources can create disorder and unsustainable development practices in the absence of strong regulation and accountability. In the case of PNG, which has abundant natural resources, those who acquire and extract value out of these resources have tended to do so to benefit themselves at the expense of others and of the environment (Havini and Johns, 2001).

Further, in developing countries, most rural inhabitants depend on land and the environment for their survival. But when it comes to the extraction of renewable and non-renewable resources from that land, they have tended to miss out on the benefits. This is linked with the tendency of elites who collaborate with multinational companies to use the wealth generated from the resources for their own benefit (Havini & Johns, 2001; Banks, 1993). The abundant natural resource thus becomes a burden when those extracting them do not share the benefits with the majority of the citizens at the grassroots level. So it is fair to say that corporate greed has driven multi-national mining companies in PNG and this has turned the abundant mineral resources into a curse for local landowners. When some landowners have felt they were deprived of wealth generated from mines on their land, they have taken violent action against the company and the government. Landowners have also fought among themselves over wealth generated from mining operations, be it through physical confrontation or legal action.

The lessons to be drawn from the literature on sustainable development and environmental security are clear. Sustainable development can be achieved only if natural resources are used sustainably and equitably. To attain sustainability, developing countries must have a good sustainability policy framework, especially for the mineral resource sector, to avoid complete degradation and depletion of the natural environment. As de Soysa (2005) states, “The problem of comparative abundance and resource dependence has a clear lesson for policy that is concerned with development, the environment and human security” (p.164). The lessons for sustainable development policy in the mineral resource sector are evident in the literature on environmental security. This means countries with abundant natural resources can correct their problems with a better sustainability policy framework that addresses every aspect of development, environment and human security.

## **2.4 Perspectives on sustainability**

The three pillars of sustainable development (economic, environmental and social) will be explored in this section. As the discussion in Section 2.2 makes clear, there is no one understanding of sustainable development. Rather, it is

widely acknowledged in the literature that the meaning of sustainable development should be negotiated and understood in accordance with the local context. In PNG, the traditional, indigenous way of life gives rise to certain worldviews, perspectives and practices around sustainability, in contrast to those perspectives and practices that characterise the modern/western development project. The discussion that follows explores these contrasting worldviews, perspectives and practices as the background to creating a theoretical framework or model of sustainable development that will be used in the analysis undertaken in this thesis. It is acknowledged that the dichotomy presented between indigenous and western perspectives is artificial, as it ignores the diversity within each of these worldviews. Nevertheless, the discussion of the contrasting perspectives and practices serves a useful purpose in identifying certain key elements of indigenous and western worldviews, which helps to explain the challenge of sustainable development in PNG.

The indigenous and western development worldviews explained here are based on the notion that two economic systems exist simultaneously in PNG. For the most part, Papua New Guineans are rural people who still maintain a traditional subsistence economy, while at the political and administrative level, the capitalist economic system is promoted. As a result, mining companies are invited to mine minerals on the traditional land which is an integral part of the traditional subsistence economy that maintains the majority of the PNG population who live in the rural areas. It is vital that the key actors involved in negotiations for mining projects in PNG recognize the implications and impacts of the two worldviews and practices for achieving sustainable development in PNG. In addition, adopting sustainable development as the model of development for PNG will allow negotiating “best practice” based on both indigenous and western worldviews and practices that can ensure a transition into a modern, sustainable social and economic system.

In the PNG rural settings, people once lived relatively harmoniously with nature. Their way of life was the way of nature. Nature was conquered not by working against it but with it. People went hunting when the natural clock struck the right hour. They made gardens at times set by nature. They went fishing when nature

signalled abundance. At harvest, they celebrated with songs and dances with regalia, lyrics and steps given by nature. The big man (patriarch) in a patrilineal setting, or a matriarch in a matrilineal setting, earned their place of leadership. They were elevated by the members of the clan for good deeds. Although this seems idyllic, it is not to deny that conflicts existed in pre-colonial times between clans. However, environmental destruction was rarely experienced on the scale that is seen today as a consequence of mining.

From this indigenous perspective, land and the environment are for people's survival. In the 'Nabak' society where I come from, natural resources were purely used for subsistence and survival. We made gardens and hunted animals for our own consumption. Land was communally owned by the clan and used mainly for gardening and hunting purposes. We practised traditional shifting cultivation, especially slash and burn. This meant that we made gardens on the land, moved on to the next land, let the forest grow back for 10-12 years, before returning to the same land. We settled in one place but moved around and made gardens and hunted on our clan land. Hunting on other people's land would lead to land disputes and conflict about the land. As such, the Nabak people knew exactly where to make gardens and hunt.

Over the years, things have changed as a consequence of a variety of reasons including colonisation, the introduction of a capitalist economy and subsequent impacts of globalisation. The Nabak people have changed some of their ways, especially their traditional trading system – the barter system – which had involved goods traded for goods and little cash. Goods are no longer exchanged for goods; cash is heavily involved in trading for goods. Today, a few cash crops like coffee and vanilla are grown but not in large quantity. People are no longer organised solely through the clan system but increasingly through the newly introduced democratic system of governance. Villagers elect an individual to represent them in the local government councils. Together these developments are a part of a significant shift in the mind-set of the Nabak people and this is leading to change in their worldview. Today it is the cash economy and the democratic system of governance which dominates the Nabak people's thinking and understanding of things.

This worldview can be contrasted with what I observe to be the tenets of the Western development model. The western development worldview is focused on the individual and individual advancement. It also views money as both a means and an end. So, in this perspective, money is everything. This approach contrasts profoundly with the traditional indigenous PNG worldview and rural way of life, yet it is increasingly influential in how the people see the world. The current development strategy PNG is following is mineral-led. Mining places minerals as a source of riches for getting ahead. In doing so, Western mining companies imposed this new worldview and have corrupted the indigenous way.

Together, colonisation and mining in PNG have brought in a cash economy and this has continued in the post-independence period since 1975. Subsequently, the PNG government's mineral policy on exploiting natural resources and absorbing environmental cost was enacted as a means of obtaining revenue for financing national development (see Johnston & Jorgensen, 1994). As a consequence of adopting this Western development model, a number of other issues have also been affected, including changes in landownership practices, traditional responsibilities towards protecting the land, and the provision of basic services, which has increasingly shifted to mining companies.

Drawing on the above discussion, the key elements of indigenous and Western worldviews on economic, social and environmental aspects of development are identified in Table 1.

**Table 1. Worldviews and practices**

<b>Indigenous worldview and practice</b>	<b>Western development model worldview and practice</b>
<p><b>1. Economic perspective/practices</b></p> <ul style="list-style-type: none"> <li>• Subsistence economy</li> <li>• Barter system (goods exchange for goods)</li> <li>• Traditional shell monies were used</li> <li>• Crops grown for own consumption and survival</li> </ul> <p><b>2. Environmental values/practices</b></p> <ul style="list-style-type: none"> <li>• Land is a communal thing</li> <li>• Natural environment provide life sustenance</li> <li>• Shifting cultivation (slash and burn)</li> <li>• Natural resources are own following clan line. <ul style="list-style-type: none"> <li>• Environment provide traditional medicinal plants</li> <li>• Natural resources is shared equally among the clan members</li> </ul> </li> </ul> <p><b>3. Social values/practices</b></p> <ul style="list-style-type: none"> <li>• Maintaining traditional ways of settling land dispute</li> <li>• Decision-making is based on consensus</li> <li>• Maintain verbal transfer of traditional knowledge</li> <li>• Promote equal distribution of resources</li> <li>• Maintain identity and social relationship</li> <li>• Maintain traditional dances</li> <li>• Maintain patriarchal and matriarchal land inheritance system</li> </ul>	<p><b>1. Economic perspective/practices</b></p> <ul style="list-style-type: none"> <li>• Cash economy</li> <li>• Economic growth and wealth accumulation</li> <li>• Mineral extraction</li> <li>• Cash used to buy goods</li> <li>• Natural resources used to generate wealth</li> <li>• Cash compensation for environmental damage</li> <li>• Employment created from mineral extraction</li> <li>• Spin-off business (business development) from mining</li> <li>• Planting cash crops</li> <li>• Royalty payments for extraction of natural resources</li> <li>• Promoting sustainable agriculture and rural development</li> </ul> <p><b>2. Environmental values/practices</b></p> <ul style="list-style-type: none"> <li>• Mitigation seen as appropriate remedy for environmental damage. For example: <ul style="list-style-type: none"> <li>○ Building tailing dams for mines</li> <li>○ Replanting trees</li> </ul> </li> <li>• Faith in modern technology to drive agricultural practices</li> </ul> <p><b>3. Social values/practices</b></p> <ul style="list-style-type: none"> <li>• Introducing new bureaucratic systems of community governance to deal with: <ul style="list-style-type: none"> <li>○ Law and order</li> <li>○ Poverty alleviation</li> <li>○ Health care</li> <li>○ Education</li> <li>○ Infrastructure development</li> </ul> </li> <li>• Training and localisation for landowners (transfer of skills and knowledge to the locals)</li> </ul>

Table 1 identifies key features of indigenous and Western development model worldviews on economic, social and environmental aspects of development. In order to assess the commitment of mining projects to sustainable development, I have outlined a model of sustainable development (see Table 2). This model will be applied to an analysis of the Environment Act (2000), the Mining Act (1992) and the MOA of the Hidden Valley/Hamata mine, and of the interviews with various key actors.

**Table 2. Sustainable Development Model**

<p><b>(1) Normative Values</b></p> <ul style="list-style-type: none"> <li>• Environmental justice</li> <li>• Equity</li> <li>• Democratic participation</li> <li>• Future generations</li> <li>• Precautionary principle</li> </ul>
<p><b>(2) Economic Systems</b></p> <ul style="list-style-type: none"> <li>• Capitalist economic growth acceptable</li> <li>• Traditional economy also acceptable</li> </ul>
<p><b>(3) Knowledge Base</b></p> <ul style="list-style-type: none"> <li>• Science and Technology only one part of solution</li> <li>• Non-Scientific knowledge/traditional knowledge recognised</li> </ul>
<p><b>(4) Key Actors</b></p> <ul style="list-style-type: none"> <li>• Government</li> <li>• Community</li> <li>• Environmental groups/NGOs</li> <li>• Industry</li> </ul>
<p><b>(5) Community Participation</b></p> <ul style="list-style-type: none"> <li>• Community participation in decision-making in keeping with the principles of deliberative democracy</li> </ul>

## **2.5 Analysis of sustainable development model**

### **2.5.1 Normative values**

The normative values of sustainable development are environmental justice, equity, democratic participation, future generations and the precautionary principle. These can be described as normative values relating to social-environmental affairs (Barry, 2003). The discussion that follows draws on Bullard, (2005); Eckersley, (2004); 'Principles of Environmental Justice,' (1991); Krauss, (1994); Plumwood, (1998); Baber & Bartlett, (2005); and Dryzek, (1995, 1997, 2005).

According to Bullard (2005), the concept of environmental justice was unheard of in the vocabulary of social movements and within earlier discussions of sustainable development until the 1980s. But it has become one of the fundamental principles of sustainable development. Environmental justice addresses problems of environment and justice affecting the marginalised citizens of the world (see Krauss, 1994). Environmental justice calls for both governments and business corporations to respect the indigenous people and stop, or at least adequately manage and compensate for, the ecological destruction of their land and environment (see Guha, 1997; Shiva, 2000; LaDuke, 1999; Bayet, 1994). For example, this normative value calls for companies that produce toxic and hazardous waste to control their waste and be accountable for causing any harm to humans and non-human species.

Like the idea of environmental justice, equity calls for fairness in human dealings with the care for the environment and the poor. This can be possible if sustainable development is practised by the wider society. Sustainable development encourages fairness and promotes equity in balancing the values of environment and development. However, it can be argued that equity is not achievable in the current capitalist economic system (see Paehlke, 2004; Ophuls & Boyan, 1992; Wissenburg, 1998; Goodin, 1994). That is, the capitalist economic system does not encourage a level playing field for all; rather it encourages individual wealth

generation and accumulation. As such, it can undermine the achievement of equity. This value, though, is achievable if it is built into the notion of sustainable development that is articulated in policy and practice.

Sustainable development encourages participatory decision making by the wider community and, thus, it encourages the value of democratic participation, transparency and accountability in the decision making process (see Baber & Bartlett, 2005; Dryzek, 1997, 1995, 2005). It encourages all citizens to participate in decision making about environment and development. This is linked with the view that problems of environment and development affect all of society. This value supports the inclusion of all affected members of society in making decisions about environment and development.

Sustainable development also gives value to the interests of future generations. Future generations are fundamental to the notion of sustainability. This includes the interests of those yet to be born and addresses questions about how they will survive. It implies that decisions about resource use today have to ensure their availability for use later. The question is, how do we use resources in such a manner that enough will be left for tomorrow? Adhering to this value requires tough decisions about the use of resources and the nature of sustainable development (see Carruthers, 2001; Meadowcroft, 2000; Baber & Bartlett, 2005).

Sustainable development also implies adherence to the precautionary principle, which states that in the absence of a scientific consensus that irreversible harm will occur from an activity, the burden of proof will be on the proponents of that activity to establish its safety for humans and the environment (World Commission on Environment and Development, 1987; Meadowcroft, 2000; Carruthers, 2001). This value implies that individual action, group action and corporate action which result in adverse impacts on humans and/or the natural environment must be controlled. Sustainable development thus promotes the idea that natural resources must be used in such a manner that they will be available for use today, tomorrow and into the future.

## **2.5.2 Economic systems**

The capitalist economic system and the traditional economic system are both recognised within the model of sustainable development, and both systems are recognised as having potential for the practice of sustainable development. Although sustainable development, generally speaking, endorses the capitalist economic system, it is with some caveats. There is recognition, for example, that the environment is not usually given importance within capitalism and hence there is a call for strict government regulation to protect the environment while ensuring economic development (World Commission on Environment and Development, 1987). Given the dominance of the capitalist economic system globally, it tends to override the traditional economic system. However, sustainable development can potentially occur within both the capitalist and the traditional economic system. Capitalist economic growth allows for individual citizens to accumulate wealth through pursuing self-interest (see Goodin, 1994; Ophuls & Boyan, 1992; Sagoff, 1988), while the traditional economic system encourages economic sufficiency. In some traditional societies, equitable distribution of wealth and/or material security is also seen as important, which is a significant aspect of the concept of sustainable development.

## **2.5.3 Knowledge base**

This is in the view that an understanding of the knowledge base for sustainable development will help lead to the design of appropriate ways and methods of practising sustainable development. In this context, science and technology is only one part of the strategy to achieve sustainable development. The policy process to achieve sustainable development also recognizes traditional/indigenous knowledge as legitimate and valuable.

Sustainable development requires the use of appropriate scientific knowledge and technology in the process of development (see Barry, 2003; Hawken, Lovins & Hunter- Lovins, 1999). For example, industry production processes which lead to the emission of toxic and hazardous waste may be improved through the development of technologies which control such waste and its threat to humans

and the environment (see Barry, 2003; Sabel, Fung & Karkkainen, 1999). The application of scientific and technological knowledge can also result in more efficient use of help natural resources (see Lee, 1999; O'Brien, 2000; Baber & Bartlett, 2005; Plumwood, 1998)

In addition, sustainable development also recognises non-scientific knowledge/traditional knowledge as valuable. Rural people in developing countries depend on their land and environment for daily sustenance. As scholars have argued, in the rural Third World, people's interactions with nature gives rise to a deep-rooted, often class- and gender-specific, knowledge of the local environment (see Agarwal, 1992; Kurian, 2000). Achieving the goal of sustainable development requires giving value and legitimacy to such knowledge in the development planning and implementation process.

#### **2.5.4 Key actors**

The state is perhaps the most important actor in achieving the goal of sustainable development. It makes all relevant policies and decisions, and also creates and enforces appropriate legislations and regulations that frame the practice of sustainable development (see Haque, 1999, 2000; Hecht, 1999; Meadowcroft, 2000). The government can also require greater investment in information gathering and provision of information to aid decisions during negotiation. Yet, it should be acknowledged that in many developing (and developed) countries, the state becomes dependent on powerful economic actors, such as multinational business corporations. This often means that the state is unable to regulate adequately such businesses, including mining companies.

Thus, a second key actor is industry/business interests. The sustainable development model views industry as central to achieving sustainable development. Business actors are key to ensuring economic development through the generation of jobs and revenue for the state. As a result, industry can wield significant influence on state policy to the detriment of social, environmental and economic sustainability. Yet, a strong state committed to sustainable development

can ensure that industry, along with other actors, complies with the goals and practices of sustainable development (see Baber & Bartlett, 2005; Beck, 1998; Sabel, Fung & Karkkainen, 1999).

A third important actor comprises environmental groups and other NGOs, which play both direct and indirect roles in promoting sustainable development (see Hailey, 2001; Bryner, 2001; Dryzek, 1997, 2005; Baber & Bartlett, 2005; Schlosberg, 1999). They are important players in the context of sustainable development as many of them have relevant skills and knowledge to practise sustainable development. Much of their work is in the community with marginalised groups. In addition to local NGOs, there are also international environmental organizations, such as the World Wildlife Fund (WWF) that have conservation programmes to protect wildlife in developing countries such as PNG.

Finally, the success of government policies on sustainable development depends on the extent to which they are embraced by the general public. The vision, aspiration, and implementation of sustainable development need to be developed with the participation of the wider community. And thus, the community is also a key actor in the practice of sustainable development (see Dobson, 2003; Beck, 1998; Dryzek, 1995).

### **2.5.5 Community participation**

The literature on sustainable development recognizes the importance of the participation of the community in the practice of sustainable development as a fundamental part of good practice (see Dryzek, 1997, 2005; Beck, 1998; Kovel, 2002; Bookchin, 1990). Given the impact of economic development activities such as mining on people and the environment, active participation by the diverse groups in society in policy formulation and decision making is important if sustainable development is to be achieved. It is the community that feels the positive and negative effects of development. So engaging community in any development process is as important as any other key actors mentioned above. As such, sustainable development recognises the importance of community

participation in development projects like mining. Community participation can take many forms, not all of which are equally meaningful. In this thesis, the principles of deliberative democracy are seen as providing a rationale for meaningful community participation in decisions on mining projects.

As defined by Baber and Bartlett (2005), “Deliberative democracy roughly refers to a school of political thought that assumes that genuinely thoughtful and discursive public participation in decision making has the potential to produce policy decisions that are more just and more rational than existing representative mechanisms” (p.3). This definition of deliberative democracy is the most relevant for the sustainable development model articulated in this thesis.

According to Baber & Bartlett (2005), “The essence of democracy is deliberation rather than voting, interest aggregation or rights” (p.6). This means that, in practice, democratic systems must encourage the public to participate by deliberating on all issues of public importance. They argue that “deliberative democracy has the potential to produce more environmentally sound decisions than does interest-group liberalism because it allows citizens to develop a broadly ecological perspective” (ibid., p. 4). The deliberative democracy process consequently encourages community participation by creating systems that allow people to contribute their ideas and deliberate on the issues affecting them (see Dryzek, 1995, 1997, 2005).

In the context of PNG, active community participation will allow the incorporation of local communities’ ideas and knowledge into decision making about mining projects on their land. In this way, landowners can actually incorporate their knowledge about the uses of the environment and land, and the impacts on the social structure, which are going to be affected by the mining project, into decision making processes. As Mosse (2001) points out, “An important principle of participatory development is the incorporation of local people’s knowledge into programme planning” (p.16), which can help deal with possible problems that arise from the project.

Active community participation in decision making can also promote efficiency, effectiveness, as well as the process of democratization and empowerment (see Cleaver, 2001, p. 16). In addition, active community participation in decision making can establish mutual trust and respect (Hailey, 2001, p. 101). Trust and respect clearly are important ingredients that should bind the landowners, the mining company and the government in the agreements signed for projects in PNG. But they can only be achieved if the communities are actively participating in the decision making concerning the mining project, which in turn must be grounded in a model of sustainable development.

## **2.6 Methodology**

This research uses a phenomenological research paradigm. Phenomenology is concerned with the understanding of human action from the actor's own frame of reference (Colliers Encyclopedia, 1991). The thesis uses a qualitative research methodology to present a single case analysis of the concept of sustainable development in the context of the Hidden Valley/Hamata mine in PNG.

A case study implies the use of a single unit of analysis such as a company, a group of workers or an event (see Yin, 1994, 2003). The experience of NAKUWI Landowners Association and Morobe Mining Joint-Ventures is approached as a case study in this research. It was chosen because it is a new mining project and, under the purview of the Environment Act (2000), it must grapple with issues of 'sustainability', making it an ideal case for this project.

### **2.6.1 Methods used**

The following methods of data collection and analysis were used in the study: (1) in-depth interview; (2) focus group or group interview; and (3) analysis of official documents (i.e. the Environment Act 2000 and the MOA). The primary focus of the data collection and analysis was to examine the views, beliefs and principles of key actors about sustainability, environment and development, as evident in the interviews. It also sought to examine how the concepts of economic, social and environmental sustainability were incorporated into negotiations over the mining

agreement signed for Hidden Valley/Hamata mine. The fieldwork for this research was conducted in PNG from November 2008 to January 2009.

Four main ‘actors’ were identified as major stakeholders in the Hidden Valley/Hamata project and chosen for this research: 1) Morobe Provincial Government; 2) Morobe Mining Joint-Ventures; 3) ‘NAKUWI’ Landowners Association; and, 4) the ‘NAKUWI’ villagers who are represented by the Landowners Association. In-depth interviews were conducted with eleven people, including four from the NAKUWI Landowners Association; two employees of Morobe Mining Joint-Ventures, four Morobe Provincial Government officials, and a representative from Nauti village. In addition to in-depth interviews, two ‘focus groups’ were held in the two main villages of NAKUWI Landowners Association: Kwembu and Winima. Participants from Kwembu village comprised five men and two women. Participants from Winima village included four men and three women.

A third focus group for the village of Nauti had to be abandoned due to road conditions. Instead, an in-depth interview was conducted with a representative of the village, who works for the mining company (i.e. Morobe Mining Joint-Ventures) at their office in Wau, Morobe Province. The interview with this particular respondent was different because the same focus group questions were asked and the respondent answered them on behalf of Nauti village. Because this respondent is highly respected by the villagers, the answers on behalf of Nauti villagers are very likely to be a valid representation of the views of the village.

To set up the interviews, letters were sent from New Zealand to arrange the time and place of interview one month before fieldwork began. Contact was also made through telephone and followed up by a confirmation letter to finalise the arrangements. Informed consent was sought from all participants before the interview was carried out. In some cases consent was recorded on audiotape.

For the focus group interviews, one of the participants who knew how to read English read out the consent form provided and translated it for the group. Before the formal group interview began, the seven participants called out their full name

and the clan they represented. At least four major clans were identified in each of the three landowning villages of Hidden Valley/Hamata mine.

The interviews were conducted in English and ‘Tok Pisin’ (Melanesian Creole English) and later translated into English. In addition, the research also undertook an analysis of the MOA for Hidden Valley/Hamata mine, and of relevant legislation.

### **2.6.2 In-depth interview**

It is possible to discover ideas, views, and experiences of research participants through in-depth interviews (Locke, Spirduso & Silverman, 1987). For this study, the participants’ views were gauged to establish their perspectives and concerns about economic, environmental and social issues around sustainability in the mining agreement signed for Hidden Valley/Hamata mine.

The eleven participants mainly shared their views and experiences of negotiating ‘sustainability’ for Hidden Valley/Hamata mine. The main issues raised were about the distribution of the benefits and royalties from the mine amongst stakeholders, business development opportunities (spin-off businesses), employment, training and localisation [i.e. transfer of knowledge and skills to the locals], infrastructure development and environment.

### **2.6.3 Focus group interview**

Two focus group interviews were conducted with clan members from Kwembu and Winima villages. The participants from the two villages were chosen based on their firsthand knowledge and experience of living and working at the mine site. They had thus experienced the economic, environmental and social changes taking place in the village. Participants were also selected on the basis of age, ethnicity, class, background, marital status and level of education reached. All participants were adults with mining experience, who had been in the village for at least the last twenty years because they had a better understanding of the

research issues. The plan was to select five to seven people for the focus group discussion.

Although more than seven people turned up for the focus group discussion, only seven were allowed to participate in the discussion. I listened to the participants and tape recorded all the interview discussions during the one- to two-hour sessions. The focus group discussion for the Kwembu villagers was conducted at their women's resource centre in the village. For the Winima villagers, the focus group discussion was conducted at the residence of one of the participants at Wau. These were convenient places to get the participants from the two villages to gather.

The reason for conducting the focus group discussion for Winima village at Wau town was because most of villagers do not live permanently in their village. They move back and forth from the village and Wau town. Wau and Bulolo are small mining towns in Morobe Province, PNG, established during the early 1930s. During the 1930s, there was a gold rush in this part of PNG and Europeans came to mine the place for gold and established these two mining towns. Now, most people from Kwembu and Winima villages live in Wau town.

## **2.6.4 Data analysis**

### **2.6.4.1 Interview analysis**

All interviews were transcribed into English. Each participant was ascribed an identifying alpha-numerical code to protect confidentiality. For example, in the code 'ADF1', 'A' represents the name of the village, 'D' represents the name of the stakeholder group, F represents the sex of the participant which is female and 1 represents the number given to the participant.

Each interview transcript was read multiple times to identify themes around issues of environment, development and sustainability, in accordance with the model of

sustainable development discussed in this chapter. The analysis of interview data is presented in chapter 4.

#### **2.6.4.2 Document analysis**

The official documents analysed were the Environment Act (2000), the Mining Act (1992) and the MOA for Hidden Valley/Hamata mine. The MOA was signed between the major stakeholders of Hidden Valley/Hamata mine: National Government, Morobe Provincial Government, Morobe Mining Joint-Venture and NAKUWI Landowners Association representing the three landowning villages of Nauti, Kwembu and Winima.

The MOA outlined the different undertakings of each of these stakeholders. Each document was read carefully to identify and analyse whether and in what ways the themes of environment, development and sustainability were dealt with. The detailed analysis of the documents is presented in Chapter Three.

#### **2.6.5 Limitations of the methods used**

The limited time available to carry out fieldwork is a problem for conducting qualitative research. The number of participants involved in such interviews (i.e. in-depth and focused group interview) was typically small, thus preventing any dependable generalisation of the findings (see Yin, 1994, 2003). A second limitation is that the researcher does not control the data collection environment. Hence, a serious limitation of qualitative research is the difficulties in interpreting the results objectively (see Yin, 1994, 2003). Also the participants involved in a focus group interview, especially those who talk the most, may not be fully representative of the broader target audience (Quester, McGuiggan, McCarthy & Perreault, 2001).

Another problem faced during the field trip was difficulty in obtaining a social mapping report that had been produced for the Hidden Valley/Hamata mine. None of the research participants from the mining company, landowner associations and provincial government had a copy of the report. The company had conducted the

social mapping exercise to comply with guidelines set for obtaining a mineral and petroleum development license as stated in the Mining and Petroleum legislation. The company had set the terms of reference for the mapping exercise and had engaged a consultant to carry it out.

The problem with the mining company conducting the social mapping exercise is that since the company funds the social mapping exercise, the final social mapping report becomes the property of the company. The report is kept secret by the company as it contains confidential information like landowners' family genealogy, clan history, clan names and other information on traditional land tenure arrangement. Mining companies are only allowed to give a copy to the authorised government officials mandated under the Mining Act 1992 and Oil and Gas Act 1998. For this reason, the social mapping report for Hidden Valley/Hamata mine was not made available for this research.

## **2.7 Summary**

In summary, then, this chapter has offered a discussion of the theoretical framework and methodology used for this study. It has provided an overview of sustainable development and environmental security, and highlighted differing perspectives on sustainability to create a model of sustainable development to apply in this research project.

The chapter also explained how the study employs a phenomenological research paradigm and qualitative methodology for data collection. It provided a rationale for the case study analysis of the Hidden Valley/Hamata mine project in PNG that explored how concepts of environment, development and sustainability are understood and negotiated by the key stakeholders. It also provided a discussion of the qualitative methods, including in-depth interview, focus group interviews, and document analysis, that provide the empirical data for this study.

The next chapter turns to an analysis of the Environment Act (2000), the Mining Act (1992) and the Memorandum of Agreement that was signed by the four major stakeholders in the Hidden Valley/Hamata mine.

## **CHAPTER 3 SUSTAINABLE DEVELOPMENT IN PNG: AN ANALYSIS OF KEY DOCUMENTS**

### **3.1 Introduction**

In PNG, the primary legislation concerning the environment is the Environment Act (2000). This is the legal foundation on which the concept of sustainable development rests. In addition, PNG has another important law with implications for the topic of this thesis, namely, the Mining Act (1992). This chapter begins with a review and analysis of the Environment Act, followed by a discussion of the Mining Act, with a focus on identifying the PNG government's worldviews on sustainability, environment and development. It then turns to an analysis of the Memorandum of Agreement (MOA) for the Hidden Valley/Hamata mining project. In analysing these documents, the primary aim is to examine how these documents deal with the economic, social and environmental dimensions of sustainable development.

### **3.2 The Environment Act (2000)**

The purpose of the Environment Act is to give effect to the Fourth National Goal and Directive Principle (Natural Resources and Environment) of the PNG Constitution (Environment Act 2000, p.1). It may be seen as a transformation of the PNG Constitution and decision making processes to protect the environment and natural resources.

The Environment Act established new regulatory procedures for guiding the effects of non-renewable resource projects like mining on the environment. From the outset, the introduction of this legislation suggested that there was a clear recognition of the importance of addressing sustainability and sustainable development in development projects and mining agreements for maintaining traditional landowners' life and minimising environmental damage in the long term.

The “Objects” of the Act are:

- to promote the wise management of PNG natural resources for the collective benefit of the whole nation and ensure renewable resources are replenished for future generations;
- to protect the environment while allowing for development in a way that improves the quality of life and maintains the ecological processes on which life depends;
- to sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations, and safeguard the life-supporting capacity of air, water, land and eco-systems;
- to ensure that proper weight is given to both long-term and short-term social, economic, environmental and equity considerations in deciding all matters relating to environmental management, protection, restoration and enhancement;
- to avoid, remedy or mitigate any adverse effects of activities on the environment by regulating in an integrated, cost-effective and systematic manner, activities, products, substances and services that cause environmental harm;
- to require persons engaged in activities which have a harmful effect on the environment progressively to reduce or mitigate the impact of those effects as such reductions and mitigation become practicable through technology and economic developments;
- to allocate the costs of environmental protection and restoration equitably and in a manner that encourages responsible use of, and reduced harm to, the environment;
- to apply a precautionary approach to the assessment of risk of environmental harm and ensure that all aspects of environmental quality affected by environmental harm are considered in decisions relating to the environment;
- to regulate activities which may have a harmful effect on the environment in an open and transparent manner and ensure that

consultation occurs in relation to decisions under this Act with persons and bodies who are likely to be affected by them; and

- to provide a means for carrying into effect obligations under any international treaty or convention relating to the environment to which Papua New Guinea is a party (Environment Act 2000, Part II 4).

The fundamental principle of the sustainable development worldview is that economic growth and environmental protection can be reconciled through improvements in the current institutional arrangements (Dryzek, 1997). This principle underpins the Environment Act (2000), as evident from the provisions specified above. In addition, all of the core elements of sustainable development, such as concern for future generations, wise management of resources to ensure both short term and long term environmental protection, and a focus on mitigating and remedying any harmful effects on the environment are espoused by the Environment Act .

The Environment Act also emphasizes ‘Matters of National Importance’ whereby, “all persons exercising powers and functions under this Act shall recognise and provide for the following matters of national importance:”

- the preservation of Papua New Guinea traditional social structures;
- the maintenance of sources of clean water and subsistence food sources to enable those Papua New Guineans who depend upon them to maintain their traditional lifestyles;
- the protection of areas of significant biological diversity and the habitats of rare, unique or endangered species;
- the recognition of the role of land-owners in decision-making about the development of the resources on their land; and
- responsible and sustainable economic development (Environment Act 2000, Part II 5).

If we see the Environment Act as representing the worldview of the PNG government, then the provisions referred to above demonstrate another example of the shift towards sustainable development values. This is evident in the inclusion of the need for preservation of PNG traditional social structures, the protection of significant biological diversity and the recognition of the role of landowners in decision-making. As clearly stated above, the incorporation of landowners' cultures and traditions in the mining agreements is important. Also the "objects" of the Act clearly shows that preservation of PNG environment is crucial in the process of extracting mineral resources.

Similarly, the Act may be seen as incorporating into decision making the economic, environmental and social aspects of sustainable development. The "objects" and "matters of national importance" of the Act emphasize the consideration of indigenous and western development model worldviews and practices of sustainability, environment and development. Overall, the main provisions of the Act represent a commitment to an ideal notion of sustainable development.

### **3.2.1 Implications and practice of the Act**

I next focus on the implications of what the Environment Act requires as the most appropriate practices for preventing or managing the adverse effects of resource projects.

Part IV, V and VI of the Environment Act sets out the regulatory framework. Part IV calls for preparation of environmental policies, and Section 33 outlines the procedures for doing so. Part V calls for obtaining environmental permits from the government before commencing any activity that will affect the environment. Section 51 outlines the activities that must be carried out in order for an applicant, such as the mining company, to conduct Environmental Impact Assessment (EIA) for the proposed activity. However, before the EIA is carried out, an "inception report" must be provided by the proponents of the project stating what will be contained in the environmental impact statement (Section 52). EIA as the most

rational approach to risk analysis remains the most important tool available to ensure that any environmental damage from an activity is mitigated. Part VI outlines the requirements of environmental management plans, where Section 74 calls for environmental audits and investigation, and Section 75 calls for environmental improvement plans. Generally, the regulatory framework outlines what should be included in any assessment for new resource projects like mining and under what circumstances the government's environmental officers should accept or reject applications for mining development licenses.

Although the Act has clearly stated requirements to ensure sustainable development, the real situation on the ground to date paints a different picture. Landowners and communities around mining areas have raised concerns about the negative effects of mining projects on the environment that threaten their life. This becomes evident in the next chapter where I undertake an analysis of interviews with key actors and participants of the Hidden Valley/Hamata mine. Thus, the PNG Environment Act looks good on paper but has never been enforced to regulate the activity of the mineral industry.

I turn next to an analysis of the Mining Act (1992).

### **3.3 The Mining Act 1992**

The aim of the Mining Act 1992 is to “regulate the law relating to minerals and mining, and for related purposes.” This section analyses the main features of the Act that have general relevance for the concept of sustainable development. In particular, Section 43 (Approved Proposals for a Mining Lease) and Section 41 (Rights Conferred by a Mining Lease), as well as Sections 17, 18 and 19 of the Act that focus on negotiating the mining development contract (MOA), will be discussed. It is noteworthy that the term sustainable development is not mentioned anywhere in this legislation.

Section 43, “Approved Proposals for a Mining Lease”, talks about assessing the application for mining leases by the PNG Mining Board. It states, “In assessing

an application for a mining lease, the Board shall consider whether the proposals submitted by the applicant”:

- (i) provide for the development of the mineral deposits situated on the land in accordance with good mining industry practice; and
- (ii) provide adequately for the protection of the environment, in which case evidence that the applicant has complied with the requirements of the Department responsible for environmental matters will be conclusive of adequate protection under this section (Mining Act 1992, Part V, Section 4, p.28).

Section 41 (Rights Conferred by a Mining Lease) focuses on the Mining Lease, which requires the mining company to comply with the conditions attached to the Mining Lease approved by the Mining Board. It states that the mining company must:

- (b) construct a treatment plant on that land and treat any mineral derived from mining operations, whether on that land or elsewhere, and construct any other facilities required for treatment including waste dumps and tailings dams (Mining Act 1992, Section 41(b), p.26).

The construction of a mine tailings dam for mine-derived effluents and toxic wastes from the mine emphasized by this Section reflects the consideration of environmental and social aspects of sustainable development in the mining project.

Part V of the Act, comprising Sections 17, 18 and 19, is about “Mining Development Contracts” as stated in the Act. This means that for any new mining projects, an MOA has to be signed between the stakeholders involved before the mine commences operations. These sections of the Act are described below.

Section 17 of the Act, “Power to Enter into Agreements”, states that the National Government may enter into agreement with stakeholders involved in the mineral industry, namely, the mining companies, national government, provincial governments, landowners associations and the landowners at the village level. It also states that any terms and conditions that will be set in the agreement (MOA) signed must be consistent with the Act.

Section 18 of the Act, “Circumstances under which the Minister may Require Mining Development Contract”, states:

Where the Minister considers, on reasonable grounds, that the size or distribution of a mineral deposit, the method of mining or treating it, the infrastructure required for it or financial or economic considerations make a mining development contract necessary, the Minister may require that the mining of that deposit takes place under a special mining lease and under the terms of a mining development contract (p.14).

This section makes evident that after a mining company completes exploration studies that show enough mineral deposit on a commercial scale, they can request the Minister for Mining for a Mining Development License. The Minister of Mining can then enter into a mining agreement (MOA) with the stakeholders mentioned above.

Section 19 of the Act, “Effect of Mining Development Contract”, states:

The mining development of a mineral deposit in respect of which a mining development contract has been entered into shall be undertaken in accordance with the provisions of the mining development contract, except that, to the extent of any conflict between the provisions of the mining development contract and the provisions of this Act, the provisions of this Act shall prevail (p.15).

This section requires the terms and conditions set out in the mining development agreement (MOA) to be in accordance with the Mining Act.

### **3.3.1 Discussion of the Mining Act**

As emphasised strongly by Sections 43 and 41(b) of the Act above, the incorporation of good mining practice in the mining development plan is important. This means that any mining company seeking to operate in PNG must provide a mining development plan that reflects good mining practices before the Mining Board approves their application for a Mining Lease. Although “good mining practice” is not defined, it is reasonable to expect that the standards exercised in developed industrialised countries should, as a matter of principle, apply in PNG. The company must also provide an environment plan that complies with the terms and conditions specified by the Environment Act 2000. The Department of Environment and Conservation needs to approve the environment plan before the company submits its application for a Mining Lease to the Mining Board. But, if the mining plan and the environment plan provided by the company do not fulfil the requirements of the Act, the Mining Board is required to not approve the application for a Mining Lease until the plans are suitable amended.

Although the Mining Act and the Environment Act espouse strong principles that reflect a commitment to sustainable development, it is evident from chapters 1 and 2 that there is little evidence of compliance with these laws by the mining companies. This demonstrates that the PNG government, which stands to benefit from the revenue generated by the mining, has been unable or unwilling to enforce the relevant sections of the Act. The fact that the PNG government plays two simultaneous but conflicting roles in the mineral industry—as custodian of the land and regulator of mining practices and as an equity holder in the mining development venture—adds to the problem of enforcing the laws.

Sections 17, 18 and 19 of the Act focus on the signing of mining development agreements (the MOA) for new mining projects. These Sections do not specifically talk about protecting people and the environment from the impacts of the mining. But the mining development agreement must consider all the relevant laws, such as the Environment Act (2000) and the Mining Act (1992).

### **3.4 The Memorandum of Agreement**

The Memorandum of Agreement (MOA) is a powerful document that will be signed for any resource projects in PNG. The MOA is based on the principles of existing policies governing resources sector like PNG Mining Act 1992 and Environment Act 2000. It is a powerful document that specifies the roles and responsibilities of the key stakeholders and is binding on them.

In essence, any terms and conditions stated in the MOA must be strictly followed, and less attention will be given to the broader policies governing the particular resource sector. For example, if the MOA does not mention anything about school fee assistance for landowners' children, the government and the mining company will not provide such school fee assistance. They will strictly go by the terms and conditions stated in the MOA. This illustrates why it is important to analyse how the MOA is formulated.

I now turn to an analysis of the Memorandum of Agreement (MOA) signed for Hidden Valley/Hamata mine.

### **3.5 Analysis of MOA for Hidden Valley/Hamata mine**

The MOA for Hidden Valley/Hamata mine was signed in August 2005 by the National Government, Morobe Provincial Government, Morobe Consolidated Goldfields and 'NAKUWI' Landowners Association. During the signing of the MOA, the South African mining company was called Morobe Consolidated Goldfields (MCG) but the name has since changed to Morobe Mining Joint-Ventures, and is now owned jointly by a South African company, Harmony Gold, and an Australian company, Newcrest Mining.

As PNG continues to experience a mineral resource boom, the key question remains: how well is the concept of sustainable development addressed in the recent mining agreements? The next part of this chapter addresses this question by analysing the Memorandum of Agreement (MOA) signed for Hidden

Valley/Hamata mine. The analysis of the MOA looks at the economic, environmental and social issues addressed in the agreement.

### **3.6 Economic issues**

The MOA addresses a range of economic issues, including the payment of royalty to key stakeholders, the creation of agricultural projects for landowners adversely affected by the mining project, special support grants to the provincial government from the National Government, tax credit schemes to fund infrastructure development projects in villages, matters of supply and procurement, and issues of project equity. These issues are discussed below.

#### **3.6.1 Royalty payments**

One of the most important economic issues in the MOA deals with the payment and distribution of royalty, to begin after the first production of gold at the Hidden Valley/Hamata mine. The MOA specifies that the royalties for the Hidden Valley/Hamata mine will be paid as follows: Morobe Provincial Government, 42 percent; Local Level Governments (LLGs) in Wau/Bulolo District, 14 percent; affected communities within the Wau/Bulolo District, 2.5 percent; others, 2.5 percent; and the 'NAKUWI' Landowners, 39 percent.

However, it is important to keep in mind that according to the Mining Act (1992), two percent of the after-smelter price will be paid as royalty by the mining companies to the National Government. The National Government will give this two percent royalty to the hosting Provincial Governments, and the hosting Provincial Governments will then share it with local landowners and other stakeholders mentioned in the MOA. The mining companies in PNG are required by the Mining Act to pay only two percent as royalty after the smelter price. So, the distribution of royalty for the Hidden Valley/Hamata mine will come from the two percent royalty that MMJV will pay to the National Government, which then pays the Morobe Provincial Government for further distribution as specified in the MOA.

It may be argued that the PNG Mining Act 1992 is unfair to the people of Papua New Guinea. The two percent royalty appears to be minimal given the scale of the negative effects of the mining that will be experienced especially by the local landowners and even the country as a whole.

### **3.6.2 Agricultural projects**

Agricultural projects for people affected by the operations of Hidden Valley/Hamata mine is another economic issue mentioned in Section 16 of the MOA. Section 16 states that the Morobe Provincial Government will do its best to promote and create a market for agricultural produce from the mine affected areas. Section 16.2 specifies that the provincial government will provide advice about agriculture and agri-business development for people in these areas. However, it does not mention any specific agricultural activities that will be provided by the Morobe Provincial Government to the communities affected by the operations of Hidden Valley/Hamata mine. The Morobe Provincial Government is also required to provide advice in the field of agriculture and agro business development as may be required for the project in a timely manner (Section 16.1 and 16.2 of MOA, p.14). Whether the Morobe Provincial Government has the capacity and commitment to initiate such projects remains to be seen.

### **3.6.3 Special support grants**

Section 4 of the MOA refers to the Special Support Grant. Section 4.1 states that the “State will use its best endeavours to appropriate to the provincial government and make available in each financial year a grant to be known as the Special Support Grant or such other alternative grant agreed and approved between the State and the parties” (MOA, p.9). Section 4.2 states that each annual SSG appropriation will be allocated by the provincial government and managed by the Morobe Project Management Unit for use on mine-affected wards or districts or provincial projects in the Wau Rural Local Level Government, Wau/Bulolo Urban Local Level Government, Watut Local Level Government and Urban Districts and mining affected areas resulting from MMJVs mining operations (MOA, p.9).

From past experience of existing mines in PNG, the national Government rarely honours its commitments to provide the Special Support Grant, which then forces some Provincial Governments to take the National Government to court for the release of the ‘Special Support Grants’. As such, it is important that each stakeholder who signed the agreement for Hidden Valley/Hamata mine must fulfil their responsibilities stated in the agreement as it is important to achieve the desired outcome set out in the MOA. Otherwise nothing will be achieved concerning the Special Support Grant.

#### **3.6.4 Tax credit schemes**

A Tax Credit Scheme is another economic issue mentioned in Section 6 of the MOA. Money from the ‘Tax Credit Scheme’ is to be used to fund infrastructure projects in the villages and Local Level Governments affected by the operations of the mine. Infrastructure projects, such as classrooms for schools, rural health centres, roads and bridges, are primarily funded through the ‘Tax Credit Scheme.’ The ‘Tax Credit Scheme’ is another form of financial assistance provided by the National Government to the Districts and Local Level Governments in the mining area.

But the fund is still controlled by the National Government. This can lead to development projects not fulfilling the expectations of the local people, and in some cases, not eventuating at all. Hence, there is pressure on the National Government to delegate the role of ‘Tax Credit Scheme’ to Morobe Provincial Government so that it can use the money from the ‘Tax Credit Scheme’ to fund infrastructural projects that the provincial government sees fit for the people of Hidden Valley/Hamata.

#### **3.6.5 Business opportunities for landowners**

The MOA states that business development opportunities will be given to the landowners. These business development opportunities are the undertakings of National Government and the company. Section 9 of the MOA specifies that the ‘business development plan’ is the undertaking of National government, whereas Section 34 states that the ‘business development plan’ is the undertaking of

Morobe Mining Joint-Ventures. These two sections therefore require two different organizations to perform the same task.

Section 9 of the MOA states that the National Government through the Department of Trade and Industry must make sure business development plans attached to the MOA will be fully complied with and implemented. In section 9.3 it clearly states that any business development opportunity must first be given to Nauti Kwembu and Winima Holdings Limited, second to businesses owned and operated by the people of Wau/Bulolo District, third to Morobe Province, fourth to PNG and fifth to international companies.

Similarly, Section 34.1 states that the Morobe Mining Joint-Venture will use its best endeavours to ensure the business development plan submitted and approved by the Department of Trade and Industry is fully complied with and implemented. This means the business development plan that the company provided must be approved by the Minister responsible for Department of Trade and Industry before it can be implemented. If the business development plan is not approved, the company has to revise the plan and make sure it meets the criteria set by the Department. Section 34.2 states that the MMJV will encourage the development of businesses with spin-off opportunities from the project and in doing so will give preference to businesses owned and operated by, firstly, the NAKWUI Landowners under NKW Holdings; secondly, to the people of Bulolo District; thirdly, the Morobe Province; and fourthly, to the people of PNG (MOA, p.20).

### **3.6.5.1 Equity issues**

Section 41 of the MOA refers to 'Project Equity'. The MOA recognises NAKUWI' Landowners and the Morobe Provincial Government's desire to participate in the equity for Hidden Valley/Hamata project. Section 41 allows the landowners and the Provincial Government to negotiate with Morobe Mining Joint-Venture for equity in the project, which is specified as 5 percent or less, based on normal commercial and legal conditions. Yet, as will be discussed in Chapter Four, 'NAKUWI' executives did not succeed in negotiating equity for the landowners because of strict terms and conditions that govern the equity

participation in the project. Thus, the terms of the MOA are so tightly defined that it has prevented landowners from acquiring equity in the mining project.

### **3.6.5.2 Supply and procurement issues**

‘Supply and procurement’ is another form of business opportunity given to the local landowners. As stated in Sections 10 and 35 of the MOA, the National Government, through the Department of Trade and Industry, must get Morobe Mining Joint-Venture to identify and invite registration of businesses in PNG, particularly in the Morobe Province, capable of supplying materials, equipment and services to the project in liaison with Nauti, Kwembu and Winima Holdings Limited, business arm of NAKUWI Landowners Association.

But the MOA does not spell out clearly how the three landowning villages of Nauti, Kwembu and Winima will participate in the supply and procurement process mentioned in the MOA. The MOA states that, through the process of supply and procurement, Morobe Mining Joint-Venture will give first preference to landowners to provide any goods and materials that Morobe Mining Joint-Venture needs for its operations at Hidden Valley. But the MOA does not provide any safeguards against a situation where the executives of the landowners’ association and the landowners’ business arm (i.e. Nauti, Kwembu and Winima Holdings) could use this process to pursue their own self-interest, ignoring the needs and aspirations of the marginalised landowners at the village level. Nor does the MOA provide any protection from the possibilities of nepotism or corruption tainting the participation in the business opportunities provided by the mining project (see Chapter 4 for a discussion of complaints by villagers).

These complaints may not be raised if sustainable development was taken seriously in the MOA. As pointed out in chapter 2, the sustainable development model accepts values of both capitalist economic growth and the traditional economic system. Papua New Guinea is a Melanesian country where indigenous economic perspectives (worldviews) are still evident in practice. Most Papua New Guineans live in a communal setting where things are shared equally among the clan members. Decisions are made based on consensus to cater for everyone’s

needs. Yet these values are fading away because villagers are no longer upholding them. Changes in the economy and society allow individuals now to pursue capitalistic economic growth that allows for individual self-interest than for the common good of all the clan members. This situation warrants upholding both economic systems in PNG in a way that facilitates the notion of sustainable development.

### **3.6.5.3 Business financial assistance**

Finally, the National Government, Morobe Provincial Government and Morobe Mining Joint-Ventures must provide financial assistance to 'NAKUWI' Association as stated in Sections 12 and 29 of the MOA. Straight after signing of the MOA in 2005, the National Government, Morobe Provincial Government and MMJV provided some seed money to establish 'NAKUWI' Association and NKW Holdings Ltd as the business arm of the landowners' association. However, these funds from the government have been committed to help landowners and their business arm for a period of only five years. This is based on the understanding that after landowners receive their share of the royalty, they will use the royalty money to assist their business ventures. Although the MOA states that the MMJV will continue to give 'NAKUWI' Landowners Association K100,000.00 (PNG currency) annually throughout the entire life of the mine until the mine closes, this is perceived as inadequate by the landowners, as evidenced in chapter 4.

Overall, it appears that the economic benefits from the mining project may be inadequate to ensure that the villages can acquire basic services like water supply, housing, electricity, health and education. Some of these services are hardly seen in the three villages. The MOA, thus, appears to make inadequate provision for ensuring economic sustainability at the level of the villages, province, or the country as a whole.

### **3.7 Environmental issues**

The MOA addresses environmental issues in terms of the Environmental Permit, a Mine Closure Plan, and an Agro-Forestry programme for the Hidden Valley/Hamata area. Sections 8, 22 and 31 refer to the obligations of the National Government through the Department of Environment and Conservation to ensure that the MMJV complies with the country's environmental law and the terms and conditions agreed in the 'Environmental Permit' for the mine. The MOA requires the MMJV to provide regular briefs on all environmental aspects of the Hidden Valley/Hamata mine. The officers from the Department of Environment and Conservation are also required to make regular inspections to review the impact of the mine. The reports submitted following such inspections are to be made available to all the stakeholders involved in the project.

The mine closure plan as stated in the MOA refers to measures the company will take to restore the landscape and the environment in the mine area. As stated in the MOA, it is a 'Conceptual Mine Closure Plan' and was approved during the negotiations for the MOA. This means the plan needs continual updating until the mine is due to close, at which time it will be approved.

Given that the mine is an open-cut mine with a very high environmental impact, where everything is cleared and removed, it is difficult to determine how successful the mine closure plan will be. Getting the landscape back to its original shape will be difficult to achieve. As such, in the historical context of the destruction caused by mines in PNG, it is possible that mining company's promise of environmental protection and restoration is an empty gesture to win the hearts and minds of PNG government officials and 'NAKUWI' Landowners to allow them to extract minerals from their land.

The MOA also refers to an Agro-Forestry integrated conservation programme for the Hidden Valley/Hamata mine area. Section 8.5 of the MOA states that the State through the National Forest Authority will provide assistance and advice on the establishment of such a programme. There is no further explanation of what this programme is. It is possible that such a plantation may involve planting a

plantation forest in the mine affected areas. This is because there are hoop pine and klinki pine plantations of PNG National Forest Authority in the Wau/Bulolo area.

A significant question would be about how sustainable and appropriate a monoculture plantation forest would be to replace the native forests destroyed by mining. Furthermore, it is unclear how effectively the Agro-Forestry integrated conservation programme can be implemented and maintained in the future. From past experiences of mines in PNG, it is evident that the Department of Environment and Conservation lacks both skilled personnel and financial support to carry out the above task mentioned in the MOA. This often prompts the National Government to leave everything to the mining company to do whatever is required for environmental protection and conservation in the MOA. With little focus by the National or Regional Governments on monitoring and compliance, the company may well choose to ensure its own profits and ignore the negative effects of mining on the environment.

The above are the main environmental issues addressed in the MOA. A number of other issues are also pertinent in understanding the environmental issues around mining. For one, mining companies and the government sometimes do not want to make available their environmental report for public consumption. Also, the authenticity of such reports provided by the mining companies is questionable because there is a conflict of interest in such reports, and no independent means to verify what is reported. There is also a conflict of interest on the part of the government as the government is both the developer and the regulator in the mineral industry, as it owns equity in mining projects in PNG. Thus, without independent and well-resourced monitors and enforcers, there is little that can be done to enforce the provisions of the MOA. For example, in the case of the Ok Tedi mine, after a landslide destroyed the mine retention facilities, the mining company received permission from the National Government to dump mine waste straight into the Fly River system, causing massive destruction and pollution to the river system (Pintz, 1997). The requirements of the MOA were completely ignored by both the company and the government.

Considering the negative effects of existing mines on environment, the PNG government needs to seriously consider sustainable development in the mining agreements. As discussed in chapter 2, sustainable development is grounded in normative values such as environmental justice, equity, the precautionary principle, democratic participation, and future generations. The MOA appears to endorse many aspects of sustainable development, but questions remain about ensuring its implementation.

### **3.8 Social issues**

The MOA in Sections 13, 11, 33, 14, 17,18, 21, 25 and 30 addressed social issues in terms of ‘Future Generation’s Trust Funds’, employment and training, law and order, roads and infrastructure, village courts, and a family development programme. These are discussed below.

#### **3.8.1 Future generations trust funds**

The MOA in Section 13 States that some funds will be set aside for future school fees for the children of ‘NAKUWI’ Landowners. This trust fund is to be set up from the royalty received by the Morobe Provincial Government. The MOA, however, does not clarify how the fund is to be administered and what the rights and entitlements were for the children who are the supposed beneficiaries of this fund.

Here again, past experience at other mines indicates that such funds can be used by the government for purposes other than education. Thus, there are few guarantees that the ‘future generation trust funds’ will be used for the intended purpose as stated in the MOA.

#### **3.8.2 Employment and training**

The MOA in Sections 11 and 33 states that the MMJV and company contractors must organise and facilitate suitable employment training for employees,

especially the locals from the mine area. As stated in the MOA, the first preference for employment and training must go to the landowners, then people from the Wau/Bulolo district in Morobe Province, and only then the non-citizens of PNG. Although this is a requirement, if MMJV and the company contractors see that the required skill personnel is not available locally, they will recruit people who they think are best for the job even if this violates the MOA. How such situations can cause tension between the landowner employees and the employees from other parts of PNG is discussed in chapter 4.

### **3.8.3 Other social issues**

‘Law and Order’, ‘Village Courts’ and ‘Roads and Infrastructure’ are identified as other social issues in Sections 14, 21, 17 and 18 of the MOA. The National Government, through the Department of Police, is required to monitor and maintain police effectiveness and oversee law and order problems in the Wau/Bulolo District. The Morobe Provincial Government also must provide allowances for village court magistrates to solve disputes, especially land disputes, that may arise from the mine area, and as well as training and course materials for land mediators.

Despite these general provisions in the MOA, it does not offer anything specific or concrete about how the landowning villages (Nauti, Kwembu and Winima) can address law and order problems in their villages. As seen during the field research, alcohol-related issues are rampant in Kwembu village but there are no plans in place to assist the villagers in dealing with such a situation. Many of their young men (i.e. landowning villages of Nauti, Kwembu and Winima) are employed by Morobe Mining Joint-Venture and, when they get paid, they buy alcohol and create alcohol-related problems that are getting worse in the three landowning villages. Other problems such as gambling have also arisen. The MOA does not address any of these issues that are now confronting, the three landowning villages.

Finally, provision of ‘roads and infrastructures’ as stated in the MOA in Sections 17 and 18 is also identified as another social issue. As stated in the MOA, Morobe

Mining Joint-Ventures, the National Government and the Morobe Provincial Government must assist in providing funds for infrastructural projects in the mine affected areas. But the MOA does not state anything about infrastructures for the landowning villages. Hence, the issue of building basic infrastructure for the landowners at the village level, especially water supply, housing, electricity, hospitals and schools, remains unaddressed.

### **3.9 Summary**

The Environment Act (2000) outlines how environment will be managed in PNG. The Act clearly demands the incorporation of the main tenets of sustainability and sustainable development in the mining agreements (i.e. MOA). Also, the Act recognises aspects of the indigenous and western development model worldviews and practices about sustainability, environment and development. The emphasis is on preserving the environment and traditional social structures, and acknowledging the role of landowners in the decision making about the development of resources on their land. As such, it is fair to say that indigenous and western worldviews and practices of sustainability, environment and development are outlined in the Environment Act.

The second major legislation that is of relevance to this thesis is the Mining Act (1992). The Act specifies that the mining company must use good mining industry practices and ensure the protection of the environment. The Mining Act requires the signing of the MOA, the key document that determines the contractual agreement between major stakeholders in the mining project. The Mining Act does not mention the term “sustainable development”, but espouses the principles of sustainability. Yet, as with all laws, it will be only the proper implementation of, and compliance with, the Mining Act that will give it legitimacy. To what extent this will happen with the Hidden Valley/Hamata mine remains to be seen.

Finally, this chapter provided an analysis of the MOA for the Hidden Valley/Hamata mine, a 30 page document divided into seven parts. Economic, environmental and social issues are mentioned starting on page seven of the MOA. As evident from the discussion earlier in the chapter, the three issues are

not comprehensively discussed, although economic issues receive some prominence in the MOA. This is indicated clearly in the number of economic issues discussed earlier in this chapter.

Overall, the MOA outlined the undertaking signed by each of the stakeholders involved in the Hidden Valley/Hamata project to protect the environment, foster economic development, and sustain social institutions. Yet the extent to which they will comply with the MOA remains an on-going issue of concern for PNG.

It is also clear from my field interviews that landowners at the village level are always at a disadvantage in successfully negotiating economic, social and environmental sustainability in the mining agreements (see chapter 4). The MOA does not reflect the landowners' real desires and aspirations about mining project on their land. It only states what the powerful stakeholders of the National Government, Morobe Provincial Government and the developer want them to do, that is, support the mining project on their land. As stated in the MOA, the above mentioned stakeholders want landowners not to disturb the project and also help to control law and order problems in the mine area.

Another problem evident in the MOA is the duplication of roles and responsibilities between the stakeholders involved. For example, supply and procurement and employment and training come under the responsibility of the National Government and the Morobe Mining Joint-Ventures. As such, it creates confusion with no clear direction set to achieve the anticipated outcome stated in the MOA. Such a situation can cause a total communication breakdown amongst the major stakeholders involved in the project, such that none of the promised projects and initiatives may come about.

A final point of contention in the MOA is that the financial resources are controlled by the National Government, and the Morobe Provincial Government will have to depend on the National Government to carry out its roles and responsibilities in assisting communities affected by the mine as stated in the MOA. This can be difficult as the National Government does not always honour

its commitments made in the mining agreements as shown in the past experiences of the existing mines in PNG.

At the same time, PNG has a capacity problem at the Provincial and Local Government level to carry out the specified roles and responsibilities (Esonu, 2006). They basically lack the expertise and skilled personnel to implement the National Government's policies, including the requirements of the MOA. This becomes evident in the complaints raised during some interviews that some stakeholders are not honouring their commitment made in the MOA. The next chapter turns to an analysis of the field interviews.

# **CHAPTER 4 PERSPECTIVES ON SUSTAINABLE DEVELOPMENT: AN ANALYSIS OF INTERVIEWS**

## **4.1 Introduction**

This chapter contains an analysis of the interviews conducted with Morobe Provincial Government (MPG) officials, Morobe Mining Joint-Ventures employees, NAKUWI Landowners Association officials and the NAKUWI villagers involved with the Hidden Valley/Hamata project. The purpose of the interviews was to capture the views of these stakeholders about how sustainability was addressed in the MOA for the Hidden Valley/Hamata mine. The main themes covered in the questions, as mentioned in Chapter 2, were economic, social and environmental sustainability. The chapter follows the same framework as the analysis of the mining agreement (i.e. MOA) for Hidden Valley/Hamata mine in Chapter 3. Responses are analysed in terms of economic issues, environmental issues and social issues with a view towards sustainable development and environmental security. The theoretical basis is supported with perspectives on sustainability and the principles that are associated with the notion of sustainable development explained in detail in Chapter 2.

The interview analysis in this chapter is divided into four main parts:

- 1) The signing of the MOA
- 2) Economic Issues
- 3) Environmental Issues and
- 4) Social Issues.

## **4.2 The signing of the MOA**

In this section I review comments by respondents which reveal their understanding and perception of the processes around the signing of the MOA. In the MOA, the term sustainable development is mentioned three times (on pages 10, 18 and 24), and is used in reference to the ‘mine closure plan’, a ‘community

sustainable development programme’, and the setting aside of ‘land for sustainable development projects’. No definition of the term is provided. I began by asking each interviewee, what is sustainable development?

#### **4.2.1 Lack of familiarity with language of sustainable development**

Despite reference to the notion of sustainable development in the MOA, there was a distinct lack of familiarity with the term. There were also differences in the responses of each of the respondent groups. The following quote from a Morobe Provincial Government official conveys this.

GM1: We can say sustainability, environment, development and what not, but the understanding of it is not there. I suppose I don’t understand it well and I don’t expect the small people at the village level to know it too. In the MOA we did not cover it well.

He acknowledged there was no real understanding of the concepts of sustainability, environment and development. He added that, on reflection, provincial government officials had not covered these concepts well in the MOA. A comment from a landowner from Nauti village confirmed this.

ADF1: It is zero; we did not negotiate the issues of sustainability and environment well in the agreement for Hidden Valley/Hamata mine.

Another landowner from Winima village stated:

CDM2: At the moment, we don’t know anything about this concept; I can honestly say that I don’t know.

Other comments from this respondent indicated he saw these parts of the MOA as falling within the responsibility of the mining company.

A landowner association official commented that there was limited understanding of these terms:

FM1: Personally, I don’t think there is enough understanding about sustainability, environment and development. There should be more awareness carried out, but people in authority have failed to carry out awareness about these concepts.

He blamed the authorities (the national government officials, Morobe Provincial Government officials, Morobe Mining Joint-Venture officials and NAKUWI Landowners Association officials) for not doing enough to raise awareness about the concepts in the three landowning villages of Nauti, Kwembu and Winima.

Within this context, it was apparent that individuals involved in the MOA process placed their own interpretation on the term sustainable development. The following quote from a mining company official conveyed a view that sustainable development was essentially an economic concept:

EM1: I heard something about sustainable development but not in detail. When projects like mining come on board, everyone tends to think of how they will benefit from the project. If they continue to receive the kind of income they are getting with planting coffee, cocoa or maybe invest in property, then they will sustain themselves in the future.

According to him, sustainable development meant investing money from the mining project into planting cash crops like coffee and cocoa, and even in property. He was referring to the “NAKUWI’ landowners’ situation, and implying that if they invested their money in these types of economic activities it would sustain them economically in the future.

The following quote from a landowner association official reflects a view similar to that of the mining company official, and maintains that money from the mining project should be put into economic activities to generate enough funds to cater for social development.

FM1: I am mostly concerned with economic development because I believe through economic development there will come about social development and other developments.

This reflects the view that economic development facilitates social development, and will lead to the resolution of problems of law and order and provide basic services and utilities like health, education and water supply to the landowners in the village.

In addition to the view that sustainable development had essentially an economic purpose was the view that sustainability was ‘restoration’. The response from a mining company official conveyed this:

EF1: To be honest, I do not really understand the word sustainable development. Generally, I think whatever that company destroys; we must try to restore it back.

#### **4.2.2 Criticism of MOA signing as a rushed process**

Some of the responses were critical of the process by which the MOA was reached and viewed the negotiations as a rushed procedure. As the comment above indicated, the Morobe Provincial Government was seen as not having adequately investigated the issue of sustainability and as not explaining it to landowners at the village level in the MOA negotiations. This breakdown in communication also extended to the National Government, Morobe Mining Joint-Venture, Morobe Provincial Government and NAKUWI Landowners Association who failed to actively engage villagers from Nauti, Kwembu and Winima who were isolated from negotiations. Moreover, the current copy of the MOA is still not available to landowners at the village level.

The following quote from a provincial government official described the negotiations as a rushed procedure:

GM2: I am not too sure but I think there was a rush in the negotiation for Hidden Valley/Hamata project. I think Provincial Government has failed to address sustainability in the MOA.

There was little engagement of villagers of Nauti, Kwembu and Winima in the negotiations as explained by a landowner from Kwembu village:

BDM4: When we signed the MOA, they said 19 terms and conditions are in the MOA, but they never came and explained it to us. They kept it to themselves and later we found out that they did it with their own thoughts about their own interest and they want to become rich.

The terms and conditions in the MOA were not explained to members of his village. This respondent suggested officials had come up with such terms and conditions to suit their own interests rather than those of the landowners of the village. He suspected the mentioned officials would become rich.

One of the mining company officials, however, did not see the short length of time spent arriving at a MOA as problematic.

EM1: I think MOA is good in a sense that it is not difficult to implement and it has been done in a very, very short time without many arguments.

He mentioned that MOA negotiations normally take a year but for the Hidden Valley/Hamata project, they were completed within 3 months. So while there may have been disagreement over the quality of the process of MOA negotiation, it was apparent that the agreement was reached in a short period of time.

#### **4.2.3 A subsequent lack of confidence/trust in leaders of landowner organisations**

Responses from villagers conveyed a subsequent lack of confidence in their representatives in the landowner associations. Comments indicated meaningful consultation was not achieved and the landowner associations were described as providing inadequate information to the affected communities. There was a lack of transparency making it very unclear who was accountable.

These comments were made in the context of villagers failing to see many of the promised benefits coming to fruition. For example, specific reference was made to difficulties in gaining access to the promised spin-off businesses and equity. These were only accessible through the landowner associations. However, comments indicated the landowners at the village level did not trust their leaders in these associations and that they viewed them as corrupt, and as showing bias in the giving out of spin-off business opportunities.

### **4.3 Economic issues**

Reference to economic issues in the MOA addressed the questions of royalties, special support grants, a tax credit scheme, matters of supply and procurement, financial assistance to landowners, agricultural activities and project equity. The signing of MOAs for new mining projects always raises expectations of economic benefits for those stakeholders involved. A central question is that of royalty payment and distribution. The MOA states that a two percent royalty was to be paid by Morobe Mining Joint-Venture and this is to be distributed to the Morobe

Provincial Government and the NAKUWI Landowners' Association. At the moment, no royalty has been paid, but reference was made to the expectation is that 36 percent will go to the provincial government and 39 percent to the landowners. Different stakeholders tend to have preconceived ideas about prospective economic benefits, and while focusing on these they can easily forget the importance of negotiating concepts like sustainability and sustainable development. What follows is a review of interviewee responses about these issues as they relate to the Hidden Valley/Hamata project.

#### **4.3.1 Misunderstanding about royalties and high expectations of monetary returns**

Reference to the level of payment to the Morobe Provincial Government and the landowners' associations as comprising 36 and 39 percent respectively tended to be portrayed in a way that did not mention that this was from only the two percent royalty paid to the government. It seems some of the landowners did not understand this and this is why the following interviewees said that payment of this size were 'big money' for them.

FM3: I think 39 percent royalty for the landowners is a lot of money.

GM2: Thirty six percent royalties for Morobe Provincial Government is a lot. In monetary terms, I think it's a lot of money and I think it will help provincial government's budget.

The real value of the 36 percent and 39 percent payments is not yet known as there have been no payouts.

The way the 39 percent payment to landowners is to be distributed is also yet to be resolved. Landowners are still in negotiation with the government with some wanting it distributed according to clan and others through individual families.

#### **4.3.2 A view that the amount of compensation for loss of land was inadequate**

When asked about the compensation for damage to the environment, two interviewees were not happy about the current rate the mining company will pay

for environmental damage. One landowner from Kwembu village stated:

BDM4: The compensation that we get from removal of topsoil is not enough. I don't get thousands, I get hundreds, when I distribute it; it goes down to 200-100 kina (PNG currency).

According to this individual, the compensation for land damage was not enough. When he distributed what he received among his immediate family members, he was left with less than 200 Kina (PNG currency). This, he maintained, did not compensate for the damage done to his land.

Provincial government officials, as indicated in the comment from one below, had received these types of complaints from landowners affected by the Hidden Valley/Hamata mine, that compensation for environmental loss was too low to repair or make up for the damage to the land and forest.

GM1: We received a lot of complaints from the landowners saying compensation payments are too low, compared to damage done to their environment.

### **4.3.3 Employment issues**

Section 11 of the MOA is 'Employment and Training'. Section 11.1 states that National Government through the Department of Labour and Industrial Relations will make sure that Morobe Mining Joint-Venture and Company Contractors or sub-contractors develop, organise and facilitate suitable employee training plans. The training plans are to be approved by the Department of Labour and Industrial Relations and first preference for training and employment is to go to NAKWUI Landowners, second to the people of Wau/Bulolo District, third to those of the Morobe Province, fourth to the broader PNG and fifth Non-citizens of PNG. When questions were asked about employment, mixed responses were given by interviewees. Below are responses about employment and training at Hidden Valley/Hamata mine.

#### **4.3.4 Jobs and training provided for in the MOA**

Jobs and training were available to young men of the landowner villages of Nauti, Kwembu and Winima. A Nauti village landowner commented:

ADF1: Many of our young boys from the three landowning villages have gone through the company's 'training and localisation programme' and now are working as heavy equipment operators for the company (i.e. MMJV).

The training and localisation programme was an attempt to transfer knowledge and skills to landowners and prepare them for employment in the company. Most of the young men who had completed this were working at the mine site.

#### **4.3.5 Landowners' aspirations for more mine related employment**

Landowners, however, aspired to more mine related employment. A provincial government official commented:

GM1: The mine is under construction and around 2000 people are employed. In some cases, whole families are working in the mine. As from the area, landowners have been given fair employment opportunity by the company but they still want more.

In its construction phase the mine employed between 2000 and 2500 people. In this view, landowners were being given sufficient employment opportunities. The following quote from a mining company official provided another positive account of the employment and training for landowners:

EM1: Right now because of the construction phase, we roughly have 2500 employees and as soon as the construction phase is finished and production begins, the numbers will drop down to 1500-1200. We give first priority to the landowners because of the agreement of employment and training signed in the MOA.

The same mining official suggested that a small number of landowner women were also being employed:

EM1: Landowner women are also employed and ADF1 is one of them. We also have couple of female operators at the mine site, driving big trucks and roughly 30 landowner women are employed by the company.

There was, however, a lack of satisfaction about employment opportunities by local landowners in the villages of Nauti, Kwembu and Winima.

BDM1: Few landowners are employed. Some work on short term contracts and others work permanent with company in the mine. About 15 of us from Kwembu are working, both male and female. In my opinion, landowners are not offered fair employment.

According to this quote from a landowner of Kwembu village, only a few landowners were being employed, and some of these were only on short term contracts. Only 15 people from Kwembu, a village with a population of 428 were employed by the company. A landowner from Winima village stated that the mining company had promised more employment but was dishonouring its commitment in favour of non-locals and non-landowners.

CDM1: The Company has promised us things like employment but it recruits people from outside that come in and occupy the position for landowners at the mine.

Landowners also expressed concern that locals were not being promoted into leadership roles within the mine. A landowner of Winima village gave an account of worker unrest in 2008 at the Hidden Valley/Hamata mine site and explained this as a consequence of perceptions about company management bias in the promotion of staff to supervisory positions. He stated that landowners who went through the company's training programme were overlooked and non-landowners and outsiders were being promoted to supervisor roles.

CDM3: There was worker unrest at the mine site last year (2008) due to mismanagement. The landowners who went through the training programme were overlooked by the management and not promoted to the supervisory positions. Instead other employees from outside were promoted to supervisory positions and leading man.

#### **4.3.6 Business development issues**

Section 9 and Section 34 of the MOA deals with spin off businesses that will come out of Hidden Valley/Hamata project. These sections basically outlined how spin off businesses from the mine will be distributed. Section 9 (Business Development Plan) as mentioned is the undertaking of the National Government. It talks about how National Government will make sure Morobe Mining Joint-Venture provide business development opportunities following the order of preference agreed in the MOA which first preference of spin off business will be given to NAKUWI Landowners. On the other hand, Section 34 (Business

Development Plan) still talk about business development but it is the undertaking of company. It emphasized that Morobe Mining Joint-Venture must give spin off business from the mine first to NAKUWI Landowners then follow the order of preference agreed in the MOA.

#### **4.3.7 Confusion about access to mining industry business opportunities**

When asked questions about spin-off business opportunities and equity from the project, the interviewees saw these as being specifically for landowners, but there was confusion about how to access these opportunities. Some responses follow:

BDF1: Spin-off business is for us landowners but when we approach the company, why do they send us back to our leaders? It is hard to negotiate for spin-off business, when us landowners from the village (i.e. Kwembu) go and ask them they don't give it to us, so why? The main response company (i.e. MMJV) normally gives us is we have to go and see our leaders.

This quote from a landowner of Kwembu village indicated a limited understanding about how to gain access to mining industry business opportunities, and a reluctance by some villagers to work through the landowner associations.

Provisions for landowner equity in the mine were not well understood and appeared to be difficult to obtain access to.

EM1: The five percent equity is for the landowners and the Morobe Provincial Government (MPG) to buy into Hidden Valley/Hamata project. It will be difficult for MPG and NAKUWI landowners to obtain equity in the business. This means it is like credit to them and if whatever happens like mine closes early or any unexpected events happen, MPG and landowners will repay back MMJV with interest.

This quote from mining company official explained that the provincial government and landowners have the potential to purchase five percent of the equity in the project. The company planned to give them equity as credit which they would subsequently owe to the company, with the caveat that if any circumstance the mine closed early, the provincial government and the landowners would have to repay the company their equity share.

The following quote from a landowners' association official, however, suggests that these arrangements were not straight forward and would affect the royalty payments.

FM3: The other economic issue we negotiated is to own equity in the project but we were not in a better position to negotiate with the provincial government and the company. They have told us that, we will get it like a credit and it will affect our royalty. It is one of the issues that we can't solve it so we leave it like that.

#### **4.3.8 Proposals for investment of funds in agriculture and horticulture**

Section 16 of the MOA deals with agricultural activities and states that the provincial government will promote and create a market for agricultural produce from the mine affected areas. Section 16.2 mentioned that the provincial government agreed to provide advice about agriculture and agri-business development for people in these areas. A comment from a mining company official described how he had negotiated with the former Agriculture Bank and bought two run-down coffee plantations for NAKUWI Landowners.

EM1: I liaised with National Development Bank (former Agriculture Bank) and buy two run-down coffee plantations for landowners in Wau. We divided the two run-down coffee plantations into three (3) and give it to their investment companies: Nauti Investment Limited, Kwembu Investment Limited and Winima Investment Limited.

The two coffee plantations were then distributed equally among the three landowning villages (Nauti, Kwembu and Winima) through the investment companies created for business development activities generated from the mining.

Provincial government officials saw value in reinvesting any returns from the mine:

GM3: I would like to see money generated from the mine reinvested (at least for the landowners) into something e.g., agricultural farming or something where there is a chance for continuity of the livelihood of the landowners.

This view is similar like that of the mining company official above (EM1).

### **4.3.9 Questions over business capacity of landowners**

Questions were raised about the business capacity of landowners' to run businesses effectively. An interviewee from the mining company viewed investing in agricultural activities as important for the long term benefit of the villagers and he gave an example of the investment the company had made in agriculture. Two run down coffee plantations in Wau had been bought and given to landowner investment companies, but he asked whether the landowners had the capacity to manage these businesses. Comments made by a mining company employee about Nauti, Kwembu and Winima Holdings, the business arm of NAKUWI Landowners Association, reflected this view:

EM1: The Company is saying, because landowners don't have capacity, they can't help them.

A perceived lack of business administration capacity problem was seen by the mining company as a reason not to provide landowners associations with access to the mining related business opportunities.

## **4.4 Environmental issues**

Section 8, Section 22 and Section 31 of the MOA emphasize strongly that national government through the Department of Environment and Conservation will ensure that Morobe Mining Joint-Venture comply fully with the terms of the 'Environmental Permit' approved by the National Government in accordance with Environment Act 2000 in their mine operations at Hidden Valley/Hamata.

When questions were asked about environmental issues, the interviews raised issues of forest degradation, river pollution, and mine tailings, soil erosion, discolourisation of rivers and river sedimentation. Reference was also made to engaging the Wau Ecology Institute to support environmental restoration.

#### **4.4.1 A significant loss of forest and wildlife**

A mining company official outlined the way land is prepared for mining:

EF1: All the topsoil has been removed at the place where we are doing the work but on the side is fine. We cut down trees, remove soil and prepare the land for mine infrastructures.

Reference was made to loss of forests, wildlife, topsoil and soil erosion as a consequence of the mining activity that would cause problems to coffee gardens along the river banks.

A landowner from Nauti village commented:

ADF1: Most of our good trees have gone and some of the snakes we normally do not see at the dry place are now at the dry place. Our wild dogs have gone and our birds of paradise have gone too. It's difficult, we don't know whether it takes time for these things to come back again, maybe another 100 years time, I don't know.

She stated that trees and bushes provided a place for animals to live but these were being destroyed by the mining activity. They were seeing snakes in the valley where they lived and this was not normal. Their wild dogs and birds of paradise had gone because their habitat had been destroyed. According to this respondent, it would be difficult for these animals to come back and some species were facing the threat of extinction.

Reference to significant environmental damage and loss of forests and soil was also made by a land owner association official:

FM3: The forest is affected and destruction is occurring on the land. What a big mountain was before is now starting to go down. The company started to dig from the top down, and it is estimated that 400 million tonnes of topsoil with waste rock will be dug and removed. The damage is big, the height of the topsoil dumped is about 100-200 meters high and that's how bad it is.

This damage was having a negative impact on the economic sustainability of communities:

BDM5: We at Kwembu village grow coffee beans for market. We grow coffee along the river banks and are concerned the mine will increase soil erosion and bring pollutant waste from the mine down the rivers damaging our coffee gardens.

The above quote was from a landowner from Kwembu village who was working to bring this issue to the attention of the government and mining officials given that coffee was one of their main sources of revenue.

#### **4.4.2 Compensation to cover loss inadequate**

Section 31.2 of the MOA covers compensation payments for environmental damage. It states clearly that any claims for environmental damage as a result of company's mining operations are to be referred to the Department of Environment and Conservation for further investigation. There were strong views, however, that the potential compensation would be insufficient to cover the full scale of loss. A provincial government official commented:

GM1: The forest is affected because of building the mine tailings dam and the removing of topsoil for mining minerals. It is a big destruction; the forest is cut down and landowners claim compensation from the company. The landowners are only paid compensation for their fruit trees and pandanus trees.

He recognised that the forest had been destroyed as a result of building a mine tailings dam, but that compensation was being paid to landowners only for the loss of pandanus trees, and not for forest destruction and land loss.

#### **4.4.3 Lasting damage**

A landowner drew attention to the fact that the damage to the local environment was long lasting. Interview responses highlighting this issue included a quote from a provincial government official who said:

GM3: Forests were cut-down to build roads and mine the place. I think it is an issue that really needs to be considered seriously because I don't think they can replace the trees quickly. It will take fifty to hundred years to grow a tree. I don't know if the company has a plan to replant the trees and vegetation back.

He questioned whether the company plans to replant trees and other vegetation were sufficient. For him these things need to be considered seriously by major stakeholders involved in the project.

#### **4.4.4 Other observations about efforts to rehabilitate environment**

There were comments about positive efforts to rehabilitate the environment destroyed during the mining operation. Interview responses that referred to an environmental rehabilitation programme included that by a mining company official who stated that the company's environment department was taking care of the environment rehabilitation programme.

EM1: For environment, our environment section is addressing the environmental issues. I have heard that they are in touch with Forestry Department to plant trees along the river banks.

A landowner association official referred to the company's plan to replant trees and re-grass along the roads they had built:

FM1: I have seen the company (i.e. MMJV) is trying its best to plant trees and grass along the pathways and along the roads being constructed.

Another landowner association official stated that mining operations had caused destruction to the trees and vegetation, but he was satisfied that the company had come up with an 'environment rehabilitation programme' to replant trees and vegetation.

FM3: Although there are other negative impacts of mine on the land, I say thank you to the company because the company has an 'environment rehabilitation programme.' The company is planting back trees and grass to bring back bushes to hold soil. I am happy about the company's initiative to plant trees and grass back.

When questions were raised concerning the replanting of forests and broader issues around environmental rehabilitation, there were clearly different views. While some landowners and provincial government officials were sceptical, others recognised the company as being mindful of the need to replenish the environment.

A provincial government official stated that they had witnessed much destruction of the environment. They are planning to revive the defunct 'Wau Ecology

Institute' and give it responsibility to carry out a reforestation programme for the area.

GM3: In terms of the environment, we have seen a lot of destruction. We are looking at getting back the natural beauties of the area through reforestation and all that, and the 'Wau Ecology Institute' is run-down but we can revive it and run it.

Another provincial government official referred to the need to re-engage the 'Wau Ecology Institute.'

GM2: I have mentioned earlier like environmental sustainability, we have to consider Wau Ecology Institute. The government has failed to include Wau Ecology Institute in the agreement for Hidden Valley/Hamata project.

But since the provincial government and other stakeholders had failed to include reference to the Institute in the MOA for the Hidden Valley project, there were questions about the potential impact it could have. Despite this, the idea of replanting trees and vegetation is important for environmental sustainability of the area.

#### **4.4.5 Efforts to control tailings**

There was nothing in the MOA about the control of mine tailings. Tailings systems are a way of reducing environmental damage and preventing the pollution of river systems by chemicals used in the processing of the mined rock. Most existing mines in PNG do not have a proper mine tailings system, the exception being the Kainantu gold mine in the Eastern Highlands Province. Below are responses from the interviewees about tailings from the mine.

The following quote from a landowner of Nauti village stated that the mine did not have proper tailings system but that it was constructing two big dams for this. The mining company told them that all the waste from the mine would go into these dams and a purification process would take place before water was discharged into the Watut River.

ADF1: The mine has no proper tailing system but is still constructing two big dams for the tailings system. MMJV have said that everything will go through the two big dams and by the time it goes out to the Watut River it will be pure water that I can drink and I hope it's going to be true for five to ten years down the line.

She was sceptical about the claim that the discharge from the dams to the Watut River would be pure water she could drink.

The company had told the landowners that the dams were of a high standard and the first of their kind in PNG.

CDM1: The Company said its one of the best dams and it's the first of its kind in the mines in Papua New Guinea. That's what the company has said but we will see later, will it be good or not.

This landowner from Winima village was also sceptical about the promises made about the dam. A landowner association official stated that mine engineers had assured them that the mines tailings would be safe, but he was not confident he was able to judge the credibility of these assurances.

FM2: Mine experts and engineers told us that it is safe for people live along the Watut River down to Markham River all the way to three Labu villages at the mouth of the Markham River. But, we are not educated enough to know of other negative effects of the mine tailings system.

A provincial government official emphasized that since the Hidden Valley/Hamata was a mountainous place, the security of the mine tailing dam could not be guaranteed.

GM2: Hidden Valley is a very mountainous place and soil is removed to mine the place. My concern is, if there is continuous rain in the area, the dams will overflow and will be dangerous for the environment and aquatic life in the river system. It is not 100 percent guaranteed that the tailings dam built is the safest method of controlling chemical waste from the mine.

With heavy rainfall, there would always be the possibility of the dam overflowing, with significant implications for the marine life in the downstream river system.

#### **4.4.6 Concern over river sedimentation and water discolourisation**

When questions were asked about sediment build up in the river system, the responses pointed to concerns about a high loading of sediment, causing amongst other things significant discolourisation. A landowner of Kwembu village raised the concern that the headwaters of the rivers that run through Kwembu village were located at the mine site.

BDM1: The mine site is at the headwaters of all the rivers, destruction up there affects the rivers. Building materials, oil and soil get into the river system. Sediments fill up Watut River.

Mining operations at the site were affecting the rivers, with building materials, oil and soil removed from the mine site being washed into waterways. Soil removed from the mine site was also being washed down the Watut River causing sediment build up along the river bed. Some villages were likely to be affected more than others, as this landowner from Nauti implied:

ADF1: Water supplies are fine for my friends in Kwembu and Winima villages. But on Nauti side, the Watut River is already discoloured because of mining at Hidden Valley/Hamata Mountains.

The company was aware of this, as the quote following from a company employee suggests:

EM1: There are a lot of sedimentation taking place and truly I can't deny it, it takes place everyday and we are seeing the effects of it down the Watut River system where a lot of erosion is taking place and water quality is affected.

Erosion was occurring and water was badly affected. As the mine was still being constructed, the company was not at this time using chemicals to process rock. In the view of one mining company official, the planned tailings dam would be sufficient to address problems and store all of the chemical waste from the mine.

EF1: At present no chemical waste is dumped yet, it is because we are in the construction stage. We don't have a mine tailings system but still building one, we will finish it when the mine mill is ready. I trust the dam; it will hold the mines chemical waste.

However, the following quote from a landowner association official did not convey a similar confidence:

FM1: I see big destruction. Our land is spoilt; you can go up there and see the damages yourself. Our water is already discoloured and I don't know whether it is contaminated or not but water is discoloured.

## **4.5 Social issues**

Reference to social issues was made in the MOA in terms of Future Generations Trust Funds, law and order, roads and infrastructure, and village courts. In Section 28, reference was made to 'Morobe Mining Joint-Ventures Contribution to Physical and Social Infrastructure' and in Section 30 to a 'Family Development Programme.' When the topic of addressing social issues in the MOA was raised, participants identified a number of concerns which needed to be addressed. These included education and training, school fee assistance for landowner's children, alcohol problems and law and order issues. Basic services like health and education and infrastructure projects such as roads and bridges were other issues. The selection of social issues that are covered here was made on the basis of the points raised by those interviewed.

### **4.5.1 Responsibility for provisions not clearly spelt out**

The MOA spelt out that the mining company was to provide for the education of people from villages affected by the mine. Under Section 33.6, the MMJV was to consult with landowners and develop secondary and tertiary scholarship programmes for the children of landowners. The requirement was limited to the provision of fee assistance for high school and tertiary level education. Education was described as an important way to support the development of the NAKUWI landowners. The MOA contained reference to a future generation trust fund for education to be paid for out of the proportion of funding the Morobe Provincial government received from the mine royalties.

GM1: Social issues, especially education to develop human resources primarily for the three landowning villages. In the MOA, there is a clause for the future generation trust fund (specific for education). We have come up with this from the Morobe Provincial Governments share of the royalty.

Another quote from a provincial government official and NAKUWI landowner expressed frustration that the funding assistance for school fees was not being

paid. She emphasized strongly that it was mentioned in the MOA that financial assistance for school fees be available to landowners' children, but her comments indicate she was not clear about how these were to be administered.

GF1: The person that looks after the landowners' children school fees must pay the children's school fee. I don't know where that money is, but it was mentioned in the MOA that there will be school fee assistance for the landowners' children.

Responsibility for the provision of support for education were therefore not clear.

It was the understanding of villagers that the MMJV was obliged to sponsor 10 people each from three landowning villages (Nauti, Kwembu and Winima) to attend technical school to prepare them for work in the technical fields in the mine, but according to a landowner from Nauti village, this was not being supported by the mining company.

ADF1: Company (i.e. MMJV) should get 10 people from Kwembu, 10 from Nauti and 10 from Winima and send them to school. But this is not happening; every time company (MMJV) is saying, MOA doesn't say that.

According to this landowner, the training and localization programme agreed in the MOA was not implemented properly given confusion within the company about who had responsibility for these programmes.

ADF1: Training and localisation programmes were discussed in the MOA but are not implemented well due to confusion about who in the company will implement the programmes for landowners.

These comments point to the fact that landowners aspired to take advantage of the educational opportunities provided for in the MOA. A company employee who was also a landowner said that this aspiration was for women as well as men. Only a few landowner women had qualifications and were working within the mines, but she said:

EF1: I want all landowner girls to further their education. Only few landowner girls have a degree and are working with the company but most of them do not have a degree.

### **4.5.2 Alcohol and law and order problems**

Section 14 of the MOA referred to law and order issues. Alcohol abuse and law and order problems are the biggest issue in the Wau/Bulolo District. When asked about alcohol and law and order issues, three participants stated that the company (MMJV) had provided financial assistance to combat law and order problems. However, a landowner of Winima village raised concern about alcohol related problems in her area.

CDF2: Our children are now drinking alcohol and bring problems into the house, when I assess it and look back, there was no such life.

The mine was generating a lot of money and their children were using that to pay for alcohol and were subsequently causing problems in the village - fighting among themselves and causing broader community divisions. This was a new problem in that area and had occurred only following the arrival of the mine.

### **4.5.3 New arrivals**

The following quote from a landowner association official expressed concern about the possible effects of mine related migration into the area:

FM3: I believe that more people will come into Wau and settlements will pop up everywhere and crime will increase. My own observation is that, now is a good time where we should put in place some sustainable development programmes rather than waiting for the first gold production.

He anticipated new social problems as a result of people migrating to the area for work. A larger population was expected to lead to an increase in crime. He suggested the mining company had a responsibility to begin to deal with these issues early rather than waiting for the first gold production. A gesture from the mining company in the form of money for the maintenance of the Wau police station was observed by a provincial government official as a contribution to addressing the law and order problems.

#### 4.5.4 Basic services and utilities

Section 4, 5 and 6 of the MOA (Special Support Grant, Infrastructure Projects for Impacted Communities and Tax Credit Scheme) cover the provision of basic services and utilities to the affected areas. These sections state that the state agrees to provide finance through a Special Support Grant for infrastructure development identified under the provincial government five year plan. The state is also required to provide a Tax Credit Scheme through the Department of National Planning and Rural Development for the provision of basic services and utilities. The provincial government five year plan is an important document that addresses issues around the provision of basic services and utilities for landowners of the mine area.

When asked about the need for basic services, nearly all participants gave a number of reasons why the demand for basic services was relatively high in the three landowning villages. Responses about basic services from the landowner association officials and the landowners' of Nauti, Kwembu and Winima villages drew attention to the following issues.

A landowner from Kwembu village raised the concern that it was hard for them to negotiate direct with MMJV and government for basic services. The basic services that he thought his village needed were a hospital, education, roads, electricity, housing and water supply.

BDM3: It is hard for us to negotiate with the company and the government about basic services like hospitals, education, road, electricity, housing for the landowners and water supply.

Another landowner of Kwembu village also raised these concerns. She was a liaison officer for the company providing village reports for these services but nothing was happening at the moment.

BDF1: Basic services like water supply, education and health, are not provided to the landowners in the village (i.e. Kwembu). As a Village Liaison Officer (VLO) for the company (MMJV), I write village reports and request the above services for landowners but nothing is happening in the village (i.e. Kwembu).

The landowners of Winima village had seen no change in the basic services in their area. Their roads remained in poor condition and there was no new water supply.

CDF1: We stay the same, like before; our roads are bad and we have no water supply. The company (i.e. MMJV) has promised to provide us a water supply but nothing.

When services were provided, it appeared they were done so at a minimal level. A landowner of Nauti village said that the company had provided their village with a water supply, but this did not go to all of the houses in the village.

ADF1: MMJV have provided us a water supply but it is not benefiting all of us in the village. It did not go through all the houses in the village.

There was a perception, then, that the MMJV community assistance budget was insufficient for achieving the goal of providing basic services.

FM3: The Company has a small community assistance budget but it is not enough to carryout big sustainable development programme. What the company did was use it for maintenance of an aid-post, school, and road from Wau to Winima village. Apart from the above, the company hasn't done anything big yet.

Nevertheless, the landowners' associations were planning to improve their school facilities in the Wau Rural Local Government Council area and Watut Rural Local Government Council Area in the Wau/Bulolo District in Morobe Province, PNG.

FM3: We are thinking of improving all the school facilities in our area. We want to make sure teachers are available, class rooms are fixed, teachers' houses are there and teachers come in and feel at home to teach our children.

## **4.6 Summary**

The purpose of this chapter was to review the themes that emerged from interviews with participants in the Hidden Valley/Hamata mine MOA. While reference was made to the notion of sustainable development within the agreement, it was apparent that those involved in the deliberations over the agreement had little understanding of the terminology around sustainable development. The lack of understanding was described by landowners as an instance of neglect by government officials to raise awareness about these issues of sustainability. For some it meant economic development, for others it meant

restoration of flora and fauna destroyed. Related to this were criticisms by landowners and a provincial government official that the negotiation of the MOA was conducted in undue haste. As a consequence, issues of sustainability were not addressed. It was apparent from a comment by a mining company official that this view was not necessarily shared by the mining company. Nothing was wrong with the MOA, this mining company official claimed. This raises questions about the opportunity for informed and timely participation by landowners in decisions that affected them. The criticism by landowners needs to be considered carefully, especially as the mining has potential for a significant impact on future generations and sustainable development, as discussed in Chapter 2.

The issue of royalty distribution is yet to be resolved for landowners whilst the complaints about the inadequate amount of compensation payment continue to grow. Further, as comments by landowners of Kwembu village suggest, there was limited information about how to gain access to mining industry business opportunities. While government and company officials were assured that there were fair employment opportunities being offered to both male and female landowners, the landowners did not see it that way and criticised the company management for being biased in terms of the granting of employment contracts and promotions. These issues raise questions about the extent to which the promises of sustainable economic development within the MOA were actually being fostered.

There were proposals for the investment of funds in the agriculture and horticulture industries. The company had made some investment in agricultural activities in the coffee plantations, but concerns were expressed about the business administration capacity of landowners. While there may be a lack of familiarity with business administration practices, if economic sustainability is to be promoted, there is a case for particular support to address these needs.

Reference was made to the significant loss of forests, wildlife, and serious soil erosion as consequences of mine activities. Soil erosion was a direct threat to coffee plantations along the river banks. Environmental damage, loss of forest and soil was identified as having a negative impact to the economic sustainability on

the communities in the mine area. Replanting efforts were seen as being of limited value given the long lasting damage that was being done. However, compensation was only being paid for the loss of pandanus trees and not for the other damage. This indicates a very limited view of sustainability and environmental justice, and while landowner association officials tended to be satisfied with the environment restoration plan, these views were not universal and provincial government officials were also questioning the potential effectiveness of plans for the restoration of the environment.

While the company was in the process of building tailing dams, landowners were uncertain about the actual protection they would provide and felt there was no guarantee these dams would be safe during the rainy season, due to the mountainous landscape. Landowners were concerned that mining wastes would be deposited into the river system, leading to problems of sedimentation. However, the company was positive the tailing dams would hold the mine's waste. Amongst other things, this indicates a degree of confidence in science and technology as one part of the solution to addressing environmental problems.

Reference was made in the MOA to a future generation trust fund for the education of landowners' children. There was, however, no clarity on who would be responsible to administer the school fee assistance programme as well as the training and localisation program.

Though efforts have been made to deal with law and order problems in the communities, youngsters (youths) were spending money earned at the mine on alcohol, creating alcohol related social problems. Also, an influx of people migrating into the mine area to work has contributed to an increase in the crime rate. Money from the mine should be provided to maintain Wau police to handle law and order problems.

The three landowning villages faced similar needs for basic services. Kwembu villagers, however, found they could not negotiate for basic services. In Winima, there had been no change to the basic services in their area, and in Nauti services and utilities were being provided at a minimum level. The NAKUWI landowner

association did have plans to upgrade their education infrastructure in the Wau Rural Local Government Council area and Watut Rural Local Government Council area in Wau/Bulolo District.

The interviews also indicated that participation by the villagers of Nauti, Kwembu and Winima was very limited. Further, they indicated that community and environmental groups/NGOs, voices with the potential to promote sustainable development, were not engaged in the negotiations for Hidden Valley/Hamata project. Specifically, NGOs were excluded from the negotiation process. Whether this was a deliberate action by the other two actors; government and industry (i.e. mining company) is a separate issue to look into.

To shed some light on economic, environment and social issues, sustainable development needs to be seriously considered in the agreement for Hidden Valley/Hamata mine. This is because sustainable development accepts both the capitalist model which emphasises economic growth and traditional economy model which emphasizes sustainable development. Likewise, sustainable development recognises that science and technology are only one part of the solution while acknowledging non-scientific knowledge or traditional knowledge as a base for promoting sustainable development to address issues of environment and development.

# CHAPTER 5 CONCLUSION

## 5.1 Introduction

This thesis offers a study of the concept of sustainable development with regard to mining in Papua New Guinea through a case study of the Hidden Valley/Hamata mine project. Through an in-depth analysis of key documents (Chapter 3) and of interviews with stakeholders (Chapter 4), the thesis explores the extent to which principles of sustainable development were incorporated into a recent mining agreement, as well as in the negotiations amongst key actors. This chapter presents the conclusions to the research through the application of the analytical framework (see Chapter 2) to address the research questions. Implications for policy and practice are also considered. The chapter concludes by noting the limitations of the study and implication for further research.

Overall, the study addresses the research gap in the field of sustainable development, specifically within developing countries like PNG where no major research analysing the notion of sustainability in the mining agreements has been carried out.

## 5.2 Conclusions to research questions

**What are the primary actors' views, beliefs, and principles about sustainable development? In what ways do they differ or are the same?**

There were deficiencies in the understanding of questions of sustainable development among all of the primary actors, and this affected the negotiations about the mining agreement. Analyses of key documents and interviews revealed that the overwhelming concern for the actors was economic. The MOA, for example, dealt with issues of royalties from the project, special support grants, tax credit schemes, equity participation in the project; and financial assistance for the establishment of the NAKUWI Landowners Association and NKW Holdings, the business arm of NAKUWI Landowners Association. In contrast, the Environment

Act (2000) and, to a lesser extent, the Mining Act (1992), which form the legislative background of the MOA, reveal a rhetorical commitment of the state to environmental, social and economic sustainability (see chapter 3).

Similarly, the interviews demonstrated that the primary actors' views of sustainable development tended to be focused on how they would benefit economically from the project. For the company, economic aspects of sustainability were most important. The National and Provincial Governments were also concerned primarily with economic benefits, as they saw the mining project as a means for generating revenue. The NAKUWI Landowners, too, saw sustainability in economic terms. The notion of sustainability as restoration of damage caused by the mining operation was also evident, but even this tended to be seen in economic terms in the form of financial compensation for destruction of the environment.

The main economic issues raised by the grassroots interviewees were royalties, compensation payments, employment, and opportunities for equity participation and spin-off businesses.

Landowner interviewees from Nauti, Kwembu and Winima villages saw the mine as an opportunity to raise living standards and improve their lives in the village. They were less supportive of plans to build roads, bridges and classrooms, and talked more about the provision of basic services and utilities like health, electricity and water supply, as well as supporting policing to deal with law and order problems and alcoholism that had begun to emerge.

In applying the analytical framework, it is clear that the principles around the protection of the environment based on indigenous perspectives were not mentioned either in the interviews or the MOA, although they were articulated in the Environment Act. In a context where the economically and politically powerful actors—the mining company and the National and Provincial governments—were dominant, it was the assumptions of the Western development model which drove the approach to dealing with the mine.

**How do the ‘NAKUWI’ Landowners, Morobe Provincial Government and Morobe Mining Joint-Ventures negotiate issues of economic, environmental and social sustainability in the Memorandum of Agreement (MOA)?**

The focus in negotiations was on economic issues. Although some concerns were raised about environmental issues by landowners, they were disadvantaged in these negotiations because of their lack of familiarity with Western concepts. Further, the economic, environmental and social issues agreed to in the MOA were decided by only a very few actors - the National Government, Morobe Provincial Government, NAKUWI Landowners Association and the company. There was limited opportunity for participation by landowners from the villages of Nauti, Kwembu and Winima and they strongly argued in interviews that they were not represented well in the negotiations and did not have a copy of MOA with them.

It is obvious that government and mining companies exercise considerable power and enjoy substantial autonomy in this situation. Landowners operate under constraints imposed by government and mining companies. Multinational mining companies take the interests and demands of their shareholders for profits into account when negotiating the MOA. However, the government and mining companies must be sensitive to landowners’ demands or landowners may find themselves in a situation where they resort to ‘disturbances’ – violent protest – as their only way of expressing grievance and exercising power. Ignoring the requirements of social, environmental and economic sustainability in order to maximise profits can result in social and political upheaval as evident in the case of other mines in PNG (see Chapter Two).

But, the major power imbalance in PNG has its origins in the National Government’s contradictory role in the mineral industry, where it is both the regulator of the mining company and its partner in the mining development. In addition, the National Government is limited by the non-availability of information on the best practices of mining and its relative ignorance of issues of sustainable development. This makes the National Government weak, meaning it cannot impose tough laws and force the mining companies to apply the best

practices in the mineral industry. It was obvious from interviews that the government officials' lack of a deeper understanding of sustainable development makes it difficult for them to consider the importance of the notion of sustainability in the negotiation for mining agreements.

**Which views, beliefs, and principles on sustainable development are retained in the final settlement contracts? Which principles are given importance or priority over others? Which principles are lost or kept off the agenda in translation? How and why were they lost?**

The principles on social, economic and environmental sustainability were raised in the final agreement. But as noted, the primary focus has been on economic issues. Landowners in mining areas are therefore encouraged to make decisions for personal gain and economic reasons rather than for environmental and social concerns.

**How well is the notion of 'sustainable development' addressed in the mining agreements in PNG?**

The research has revealed that sustainable development is not addressed well in the mining agreements signed in PNG. It was short term economic benefits or gains like royalty, compensation payments and access to spin-off businesses which were the driving factors that led to the signing of the mining agreement. This implies that the main actors had limited knowledge about sustainable development. The ignorance may exist because they were not willing to debate the notion of sustainability during the negotiations process. It would have been a good idea to conduct some kind of awareness programmes in order to educate landowners and the surrounding communities about the notion of sustainability and sustainable development. The negotiations did not address activities to sustain the economy, environment and social living of NAKUWI landowners in the villages or the surrounding communities and the country as a whole.

Furthermore, the indigenous perspectives and practices on sustainability were not given a hearing in the negotiations. Landowner interviewees commented on the lack of attention to indigenous perspectives and practices. This highlights the question of how to integrate Western principles within a traditional subsistence

economy. This raises another question of whether indigenous perspectives and practices were deliberately ignored in the negotiation process. NAKWUI landowners did not consider indigenous values, beliefs and principles about sustainability, environment and development in the agreement signed for Hidden Valley/Hamata project. If the landowners at the village (i.e. Nauti, Kwembu and Winima) level were given a chance to participate in the negotiations, it is likely that they may have raised these ideas about sustainability, environment and development.

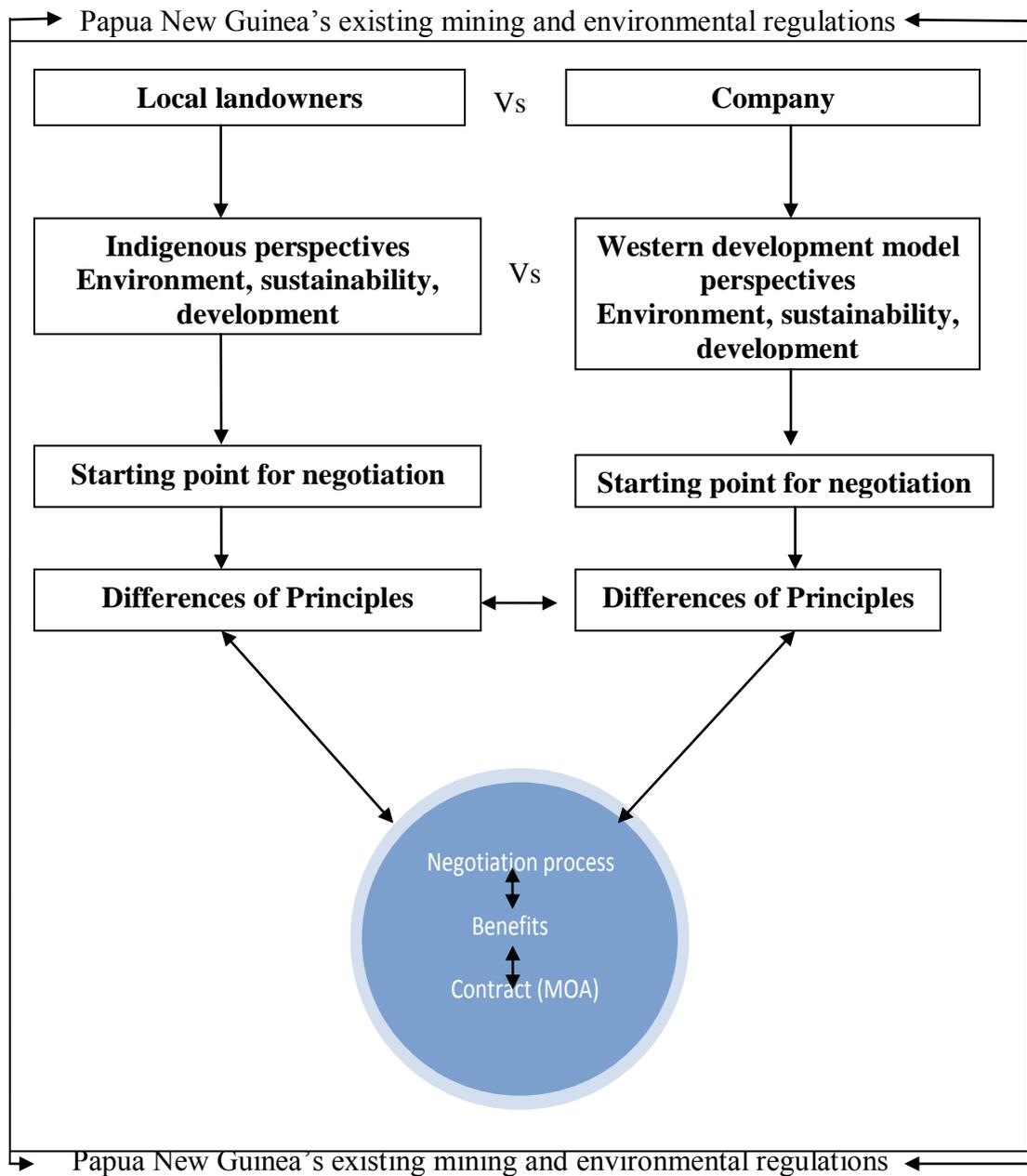
### **5.3 Implications for theory**

This research has contributed empirical evidence of how the notion of sustainability, although vital for the long-term development of PNG, is neither well-understood nor evident in the MOA. What follows is an analytical framework for negotiating sustainability, environment and development. The framework is based on the theoretical discussions of sustainable development presented in chapter 2. The framework typifies the assumption that both the local landowners and the mining company can negotiate well enough for sustainability, environment and development to enhance the negotiation of ‘sustainability’ in the mining agreements in PNG. This framework promotes a dialectical approach in negotiating sustainability, environment and development for the mining agreements. The dialectical approach encourages the local landowners to share their indigenous knowledge with the mining company’s ideas of sustainability, environment and development. Also, the framework promotes ‘bottom-up’ negotiations as it encourages all the major stakeholders’ participation in the mining agreement. That is, all major stakeholders involved in the mining project should equally participate to enhance effective negotiations for sustainability, environment and development in the mining agreement.

Although indigenous people may have their own knowledge and practices about sustainable development, they lack the understanding of Western development model perspectives and practices on sustainability. Mining companies typically bring Western perspectives and practices on environment and development, but

lack the understanding of indigenous ideology. Therefore, mining projects in Papua New Guinea provide a useful yardstick to measure the overall understanding of 'sustainability' in the mining agreements.

**Figure 2. Analytical framework for negotiating sustainability in mining agreements in PNG**



### **5.3.1 Explanation of the framework**

The framework is proposed as a guide to negotiations about sustainability in mining agreements in PNG. The framework presents a way of including indigenous values, aspirations and necessities alongside Western values and aspirations for development. Recognising the two perspectives and practices, I suggest, is essential in mining agreements in PNG. Indigenous beliefs and principles about sustainable development are crucial components within a successful agreement where all parties involved can be satisfied. Acknowledging the existence and legitimacy of the two perspectives and practices will make it easier for negotiating issues of ‘sustainability’ in the mining agreements.

The framework is designed to suit the context of PNG and the context of Melanesia (see Sillitoe & Wilson, 2003). The process of ‘Melanesianisation’ is difficult to understand and one must have a fair idea of the different values and belief systems of the different ethnic groups about sustainable development before negotiating for ‘sustainability’ in the mining agreements. For example, the Ipili people of Enga province view sustainable development differently from the Telefomin people of the Hinterland of Ok Tedi mine (see Golub, 2006; Jorgensen, 2006). Hence, mining companies that want to operate in PNG have to understand these different views, beliefs and principles about sustainable development among these different tribes. It is only such an understanding that will allow meaningful negotiations of ‘sustainability’ in the mining agreements.

The main aim behind the framework is that the two contrasting worldviews on sustainable development will be juxtaposed to improve the negotiation for ‘sustainability’ in the mining agreements. These different worldviews somehow need to be integrated if the agreements met are to be successful.

The framework encourages the comparison of the two perspectives and practices against one another. The horizontal double-headed arrows emphasize the importance of the differences in principles identified from the two perspectives. It implies that these differences will be considered by the other parties, along with

their values, merits and issues of implementability. The double headed arrow indicates the dialectical approach in sharing those differences among the major stakeholders involved so that a collective view for negotiating 'sustainability' is encouraged. The differences that are agreed upon by both sides will go through the negotiation process in the purple circle, which represents the bureaucratic system of government. Those differences that are not agreed upon by both sides will be left out with the understanding that core principles of social, environmental and economic sustainability will not be compromised.

The purple shaded area indicates the main activities that take place in the bureaucratic system of government. This is where all the major stakeholders who are involved in the mining project will come together to compare the different views, beliefs and principles about sustainability, environment and development. It is likely that heated debate will take place in this forum before the final product, the mining agreement (MOA), is reached and signed by the major stakeholders involved.

The negotiation process for the mining projects starts when the provincial government and/or the national government call the first meeting (i.e. development forum). At the 'development forum' the different activities of each stakeholder are made clear. There is no specific number of development forums that should be held, numerous development forums can be held before the Memorandum of Agreement (MOA) is signed for the mine to commence operations. The double-headed arrow also encourages the dialectical approach where the principle differences and the benefits of the mine will be debated back and forth before the final agreement will be signed.

The process initiated by the framework might be seen as tedious and the negotiations will take place in the normal bureaucratic system of government. However there needs to be a formal process which systematically provides opportunity for local landowners to have meaningful input into mining agreements. Landowners are more aware and active than ever before, and they

have the power to disrupt the operations of the mine unless their demands are met. Without opportunities to have their voices heard in the negotiation of mining agreements, they are likely to find themselves with few options but to adopt such strategies. Though mining companies have more power because of their financial resources, the government and landowners do have the potential to exercise considerable power in the negotiations process as well as the mining process.

The framework operates in a bottom-up manner instead of being attuned to a top-down approach. Instead of the views, beliefs and principles of sustainability, environment and development being determined by the mining company, national government, provincial government and the landowner associations, the landowners at the village level can be the motor that drives negotiations. This opportunity could arouse in local landowners a real sense of negotiating sustainability, environment and development in the mining agreements. Accordingly, ownership of the mining agreement initiatives will be for, and by, the local landowners rather than the current situation where it is the company and the government's involvement that is the dominant factor. The National and Provincial governments (i.e. the purple circle in the framework) should be at the stage in which financial resources, expertise and skills and technical know-how could be outsourced to the local landowners. Some local landowners have a good understanding of development issues and have more contact with the outside world, thus enabling them to mobilise efforts and resources to negotiate well for sustainable development in the mining agreements.

## **5.4 Implications for policy and practice**

Sustainable development is viewed as an ideal development model for Third World countries (see Haque, 1999, 2000; Hecht, 1999). But most Third World countries are confronted with many problems that hinder the practice of sustainable development. The main problems they faced are a lack of skills and expertise, technology, and good sustainable development policy to promote sustainable development. Nevertheless, sustainable development can be possible if the developed countries willingly share their technology, knowledge and expertise with Third World countries.

These research findings could be used to design a sustainability policy framework for the mineral industry in Papua New Guinea. Currently, the country does not have a sustainability policy framework that can address issues of sustainable development especially for the landowners of the mining projects. The framework for negotiating sustainability outlined earlier could be a starting point.

That framework could be of great use in designing appropriate policy for the mineral industry in PNG. This is because it compares and contrasts indigenous perspectives and practices and Western development model perspectives and practices at the start of the negotiation for any mining project. It will help landowners, government officials and the mining company officials understand the importance of the idea of sustainability so that they can negotiate well for sustainable development in the mining projects.

The result of this study indicates that the government has a conflict of interest and it needs an independent body to monitor environmental effects as well as a more active involvement with landowners. Also, the idea of community participation and deliberative democracy in the decision making process should be encouraged more so that sustainable development can be achieved. The idea of community participation and deliberative democracy will especially encourage landowners of the mining area to participate meaningfully in the negotiations for any future mining agreements.

However, the compensation for environmental damage paid by the mining company is not the answer to the environmental problems caused by the company. Landowners who had claimed compensation for environmental damage noticed also that the damage done to their environment is irreversible and unlikely to be restored to its former state or fully redressed through financial compensation. While they have no option but to claim compensation for environmental damage, such compensation is grossly inadequate. Future generations will inherit only barren land. Some may argue that financial compensation for environmental damage can be reinvested for future use, but the question arises as to who will control that money, and whether it will benefit all local landowners. Furthermore, given the complexity of the issues involved, it could be argued that landowners should be provided with the means to move from subsistence practices to modern economic practices that are sustainable. In this way, the cash from the mining has the potential to be better used for the long term good of society. This indicates that significantly better compensation to landowners is required to allow for both sustainable livelihoods and access to healthcare, education, and so on.

## **5.5 Limitations**

Researching sustainability in the mineral industry is very challenging. The findings are limited to the context of the mining industry in PNG. For a broader understanding of sustainable development, readers of this thesis will need to familiarise themselves with the vast scholarly literature on the subject and draw their own conclusion about the notion of sustainable development in different contexts and industries.

Further, the issues explored in the research were very sensitive at the time of the interviews and those involved took extra precaution when responding to the research questions on sustainability, environment and development. Finally, translating from Papua New Guinea's 'Tok Pisin' (Melanesian Creole English) to English and, subsequently, transcribing the interviews, was challenging and some of the strong feelings expressed may have been lost in that process.

## **5.6 Implications for further research**

Constraints impeding the main actors from effectively negotiating ‘sustainability’ in the mining agreements include the limited understanding of both the indigenous and Western development model perspectives of sustainability. Greater awareness would significantly help in the negotiation for ‘sustainability’ in mining agreements. Mining agreements must be the outcome of collective efforts from the major stakeholders involved - local landowners, Landowner Associations, Provincial Governments, National Government and the Mining Companies. Also, the notion of sustainable development is still considered as a ‘new’ concept. It is imperative that it be understood by all parties involved in negotiating sustainability as part of the mining agreements. The argument put forward is that, thus far, major stakeholders’ performance in negotiating ‘sustainability’ in the mining agreement is generally very poor. In light of this, an analytical framework offered may open up research to key research paradigms about the concept of sustainable development, while facilitating a more meaningful policy process.

This research encourages more research to be done on sustainable development in PNG. No major research has until now been conducted to analyse the concept of sustainability in mining agreements. Future research can build on this thesis to look at how the practice of sustainable development can encourage a smooth transition from old subsistence economy to a sustainable modern economy for rural landowners in PNG.

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## Appendix A Research Questionnaires

In-depth interview Questions:

Participants: NAKUWI Landowners Association Executives: their experience of negotiating 'sustainability' and 'environment' for Hidden Valley/Hamata project.

NB: Questions are specifically designed to conduct an in-depth interview on one to one basis.

Can you describe how the negotiating process works with the government and the company?

What are the main issues when you negotiate with the company? Is it easy or hard to negotiate with them? Why or why not?

What are the main issues when you negotiate with the government? Is it easy or hard to negotiate with them? Why or why not?

What is it that is difficult for you to negotiate with the government and the company?

How do you negotiate the issues of sustainability?

How is the land affected by mining?

How is the water affected?

How is the forest affected?

How is the royalty distributed?

Are you happy with the agreement?

What is good about the agreement?

What is bad about the agreement?

What is your view on the six percent royalty that will be paid to you by the company?

Is the compensation for environmental damage sufficient?

Who do you think benefits more from this project?

Do you distribute royalty to women folks? Why or why not?

How much employment is generated by the mining?

Do all villagers have some form of employment with the mining company?

Do you think the landowners offer fair employment opportunities?

Are village women employed by the company?

Is there any major disease outbreak in the villages because of mine? Like dysentery, diarrhea etc...What do you think is the cause of the disease?

Where does the mine dump their chemical waste?

Does the mine have proper tailings system?

Are you happy with the mines tailings system? Why or why not?

Were any issues of importance to you taken off the agenda for discussion by the government and the mining company? Can you give an example?

Are you familiar with the concept 'sustainable development'?

When I say 'sustainability' and 'environment', what comes to your mind?

Do you negotiate for 'sustainability' and 'environment' with HGL?

What was involved in lead up to signing of MOA/MOU for the Hidden Valley/Hamata project?

After signing the MOA/MOU with the government and the mining company? What did you notice about your views about 'sustainability' and 'environment,' did they change?

Were you surprised at anything you did?

Were you surprised at what other people did?

Are your views about sustainability and environment misinterpreted in the actual MOU/MOA?

What are some of the most important agreements that you signed while you were part of 'NAKUWI' Landowners Executive team?

What views about environment do you wish you had but did not include in the MOU/MOA signed?

How do you feel about the way other major stakeholders (i.e., National Government, Morobe Provincial Government and Harmony Gold Limited) of Hidden Valley/Hamata project behave or are responding to your grievances? What's next for you?

How do you think the notion of 'sustainability' and 'environment' was negotiated?

Is there enough understanding about the concepts of ‘sustainability’, ‘environment’, and ‘development’ among the land owners? Among the mining company negotiators? Among the members of the government?

Do you think the MOA/MOU captured every aspect of ‘sustainability’ and environment or only few?

Do you think other stakeholders like the National Government, Morobe Provincial Government and Harmony Gold Limited in the agreements share your views?

How would you rate your own negotiations for economic, environmental and social concerns of the Hidden Valley/Hamata projects so far?

How are landowners’ concerns for economic, environment and social being addressed?

Could you explain a little bit more about why it is important for you to negotiate the notions and practices of sustainability in Hidden Valley/Hamata project?

How do you measure sustainability at a variety of scales: village-level, mine site, provincial, national?

In-depth Interview Questions:

Participants: Harmony Gold Limited Officials: the experience of negotiating ‘sustainability’ and ‘environment’ for Hidden Valley/Hamata project.

NB: Questions are specifically designed to conduct an in-depth interview on one to one basis.

Can you describe how the negotiating process works with the government and the landowners?

What are the main issues when you negotiate with the landowners? Is it easy or hard to negotiate with them? Why or why not?

What are the main issues when you negotiate with the government? Is it easy or hard to negotiate with them? Why or why not?

What is it that is difficult for you to negotiate with the government and the landowners?

How do you negotiate the issues of sustainability?

How is the land affected by mining?  
How is the water affected?

How is the forest affected?

How is the royalty distributed?

Are you happy with the agreement?

What is good about the agreement?

What is bad about the agreement?

What is your view on the six percent royalty that will be paid by the company to 'NAKUWI' Landowners Association?

Is the compensation for environmental damage sufficient?

Who do you think benefits more from this project?

Do you distribute royalty to women folks? Why or why not?

How much employment is generated by the mining?

Do all villagers have some form of employment with the mining company?  
Do you think the landowners are offered fair employment opportunities by the company?

Are village women employed by the company?

Is there any major disease outbreak in the villages because of mine? Like dysentery, diarrhea etc...What do you think is the cause of the disease?

Where does the mine dump their chemical waste?

Does the mine have proper tailings system?

Are you happy with the mines tailings system? Why or why not?

Do you apply the same standard in your operations in Australia?

Can you briefly describe your general philosophy of doing business?

How do you perceive your business or industry in the future?

Do you wish to change the image? Why? How will you achieve this change?

Were any issues of importance to you taken off the agenda for discussion by the government and the landowners? Can you give an example?

Are you familiar with the concept 'sustainable development'?

When I say 'sustainability' and 'environment', what comes to your mind?

Do you negotiate for 'sustainability' and 'environment' with government and the landowners?

What was involved in lead up to signing of MOA/MOU for the Hidden Valley/Hamata project?

After signing the MOA/MOU with the company and the landowners? What did you notice about your views about ‘sustainability’ and ‘environment,’ did they change?

Are your views about sustainability and environment misinterpreted in the actual MOU/MOA?

Were you surprised at anything you did?

Were you surprised at what other people did?

What are some of the most important agreements that you signed while you were part of Harmony Gold Limited Executive team?

What views about environment do you wish you had but did not include in the MOU/MOA signed?

How do you feel about the way other major stakeholders (i.e., National Government, Morobe Provincial Government and ‘NAKUWI’ Landowners Association) of Hidden Valley/Hamata project behave or are responding to your queries?

What’s next for you?

How do you think the notion of ‘sustainability’ and ‘environment’ was negotiated?

Is there enough understanding about the concepts of ‘sustainability’, ‘environment’, and ‘development’ among the land owners? Among the mining company negotiators? Among the members of the government?

Do you think the MOA/MOU captured every aspect of ‘sustainability’ and environment or only few?

Do you think other stakeholders like the National Government, Morobe Provincial Government and ‘NAKUWI’ landowners Association in the agreements share your views?

How would you rate your own negotiations for economic, environmental and social concerns of the Hidden Valley/Hamata projects so far?

How are landowners’ concerns for economic, environment and social being addressed?

Do you promote multi-dimensional sustainability in your operations at Hidden Valley/Hamata project? (i.e. promoting economic, cultural, social and environmental sustainability).

Have you ever been aware of yourself having difficulty in negotiating the competing demands on sustainability, development and environment?

Could you explain a little bit more about why it is important for you to negotiate the notions and practices of sustainability in Hidden Valley/Hamata project?

How do you measure sustainability at a variety of scales: village-level, mine site, provincial, national?

Do you empower local people? If yes, how do you empower them?

Is there any sustainability policy of PNG mineral industry that you used for your operations in Hidden Valley/Hamata project? How do you rate the policy? Is it good for you? Or is it bad for you? Why

In-depth Interview Questions:

Participants: Morobe Provincial Government Officials: their experience of negotiating 'sustainability' and 'environment' for Hidden Valley/Hamata project.

NB: Questions are specifically designed to conduct an in-depth interview on one to one basis.

Can you describe how the negotiating process works with the company and the landowners?

What are the main issues when you negotiate with the landowners? Is it easy or hard to negotiate with them? Why or why not?

What are the main issues when you negotiate with the company? Is it easy or hard to negotiate with them? Why or why not?

What is it that is difficult for you to negotiate with the company and the landowners?

How do you negotiate the issues of sustainability?

How is the land affected by mining?

How is the water affected?

How is the forest affected?

How is the royalty distributed?

Are you happy with the agreement?

What is good about the agreement?

What is bad about the agreement?

What is your view on the thirty-six percent royalties for Morobe Provincial Government by the mining?

Is the compensation for environmental damage sufficient?

Who do you think benefits more from this project?

How much employment is generated by the mining?

Do all villagers have some form of employment with the mining company?

Do you think the landowners are offered fair employment opportunities by the company?

Are village women employed by the company?

Is there any major disease outbreak in the villages because of mine? Like dysentery, diarrhea etc...What do you think is the cause of the disease?

Where does the mine dump their chemical waste?

Does the mine have proper tailings system?

Are you happy with the mines tailings system? Why or why not?

Do you think Harmony Gold Limited apply the same standard in their operations in Australia?

How do you perceive the mineral industry in the future?

Do you wish to change the image of mineral industry in PNG? Why? How will you achieve this change?

Were any issues of importance to you taken off the agenda for discussion by the company and the landowners? Can you give an example?

Are you familiar with the concept 'sustainable development'?

When I say 'sustainability' and 'environment', what comes to your mind?

Do you negotiate for 'sustainability' and 'environment' with HGL and the landowners?

What was involved in lead up to signing of MOA/MOU for the Hidden Valley/Hamata project?

After signing the MOA/MOU with the government and the mining company? What did you notice about your views about 'sustainability' and 'environment,' did they change?

Were you surprised at anything you did?

Were you surprised at what other people did?

Are your views about sustainability and environment misinterpreted in the actual MOU/MOA?

What are some of the most important agreements that you signed while you were part of Morobe Provincial Government negotiating team?

What views about environment do you wish you had but did not include in the MOU/MOA signed?

How do you feel about the way other major stakeholders (i.e., National Government, Harmony Gold Limited and 'NAKUWI' Landowners Association) of Hidden Valley/Hamata project behave or are responding to your queries?

What's next for you?

How do you think the notion of 'sustainability' and 'environment' was negotiated?

Is there enough understanding about the concepts of 'sustainability', 'environment', and 'development' among the land owners? Among the mining company negotiators? Among the members of the government?

Do you think the MOA/MOU captured every aspect of 'sustainability' and environment or only few?

Do you think other stakeholders like the National Government, Harmony Gold and 'NAKUWI' landowners Association in the agreements share your views?

How would you rate your own negotiations for economic, environmental and social concerns of the Hidden Valley/Hamata projects so far?

How are landowners' concerns for economic, environment and social being addressed?

Did you negotiate for multi-dimensional sustainability in the operations of Hidden Valley/Hamata project? (i.e. negotiating for economic, cultural, social and environmental sustainability).

Have you ever been aware of yourself having difficulty in negotiating the competing demands on sustainability, development and environment?

Could you explain a little bit more about why it is important for you to negotiate the notions and practices of sustainability in Hidden Valley/Hamata project?

How do you measure sustainability at a variety of scales: village-level, mine site, provincial, national?

Is there any sustainability policy of PNG mineral industry that you used to negotiate for Hidden Valley/Hamata project? How do you rate the policy? Is it good for you? Or is it bad for you? Why

To what extent do you think Morobe Provincial Government can help contribute to sustainability policy in relation to minerals industry in Papua New Guinea?

What is your view about the current arrangement for the distribution of wealth generated by mining projects in PNG?

Is Morobe Province benefiting from this project? If yes state how?

Can you state any examples of benefits received from this project?

Do you empower local landowners? If yes, how do you empower them?

Questions for Focus Group:

Participants: NAKUWI Landowners: their experience of negotiating 'sustainability' and 'environment' for Hidden Valley/Hamata project.

NB: Questions are specifically designed to conduct an in-depth interview on one to one basis.

Can you describe how the negotiating process works with the government and the company?

What are the main issues when you negotiate with the company? Is it easy or hard to negotiate with them? Why or why not?

What are the main issues when you negotiate with the government? Is it easy or hard to negotiate with them? Why or why not?

What is it that is difficult for you to negotiate with the government and the company?

How do you negotiate the issues of sustainability?

How is the land affected by mining?

How is the water affected?

How is the forest affected?

How is the royalty distributed?

Are you happy with the agreement?

What is good about the agreement?

What is bad about the agreement?

What is your view on the six percent royalty that will be paid to you by the company?

Is the compensation for environmental damage sufficient?

Who do you think benefits more from this project?

Do you distribute royalty to women folks? Why or why not?

How much employment is generated by the mining?

Do all villagers have some form of employment with the mining company?

Do you think the landowners offer fair employment opportunities?

Are village women employed by the company?

Is there any major disease outbreak in the villages because of mine? Like dysentery, diarrhea etc...What do you think is the cause of the disease?

Where does the mine dump their chemical waste?

Does the mine have proper tailings system?

Are you happy with the mines tailings system? Why or why not?

Were any issues of importance to you taken off the agenda for discussion by the government and the mining company? Can you give an example?

Are you familiar with the concept 'sustainable development'?

When I say 'sustainability' and 'environment', what comes to your mind?

Do you negotiate for 'sustainability' and 'environment' with HGL?

What was involved in lead up to signing of MOA/MOU for the Hidden Valley/Hamata project?

After signing the MOA/MOU with the government and the mining company? What did you notice about your views about 'sustainability' and 'environment,' did they change?

Were you surprised at anything you did?

Were you surprised at what other people did?

Are your views about sustainability and environment misinterpreted in the actual MOU/MOA?

What are some of the most important agreements that you signed while you were part of 'NAKUWI' Landowners Executive team?

What views about environment do you wish you had but did not include in the MOU/MOA signed?

How do you feel about the way other major stakeholders (i.e., National Government, Morobe Provincial Government and Harmony Gold Limited) of Hidden Valley/Hamata project behave or are responding to your grievances?

What's next for you?

How do you think the notion of 'sustainability' and 'environment' was negotiated?

Is there enough understanding about the concepts of 'sustainability', 'environment', and 'development' among the land owners? Among the mining company negotiators? Among the members of the government?

Do you think the MOA/MOU captured every aspect of 'sustainability' and environment or only few?

Do you think other stakeholders like the National Government, Morobe Provincial Government and Harmony Gold Limited in the agreements share your views?

How would you rate your own negotiations for economic, environmental and social concerns of the Hidden Valley/Hamata projects so far?

How are landowners' concerns for economic, environment and social being addressed?

Do you think these concerns have been adequately addressed in the MOA/MOU that was signed in 2005?

Is there any major economic, social and environmental concern that really worries you?

Could you explain a little bit more about why it is important for you to negotiate the notions and practices of sustainability in Hidden Valley/Hamata project?

How do you measure sustainability at a variety of scales: village-level, mine site, provincial, national?

Have you ever been aware of yourself having difficulty in negotiating the competing demands on nature, development and sustainability?

What is your perspective about the current developments and events at Hidden Valley/Hamata project?

Can you share a particular experience that is affecting your life?

How do you discuss sustainability and environment for Hidden Valley/Hamata projects?

What is your own perspective about the mining projects on your land?

## Appendix B Research Consent Form

I .....agree to be a voluntary participant in this research and am aware of the nature and purpose of the study and its intended publication as a Master of Social Science thesis at the University of Waikato, Hamilton, New Zealand.

I am aware of my right to:

Clarify any issues or ask further questions of the researcher

Decline to be interviewed or to participate in focus group sessions

Refuse to answer particular questions and to withdraw from the research

Examine, amend or withdraw information provided within a period not exceeding 6 weeks of being interviewed.

I am aware that all information derived from my interview will be held securely, confidentiality is assured and my identity will not be disclosed without my consent.

I confirm that I have not been coerced into participating nor led to believe that any financial rewards will be offered.

Please indicate with a tick one of the following

- I wish to remain anonymous  
 I consent to being named and quoted

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Interviewer:\_\_\_\_\_

Date \_\_\_\_\_

## Appendix C Letter

Bernard Esonu  
Department of Political Science & Public Policy  
Faculty of Arts & Social Science  
The University of Waikato  
Private Bag 3105  
Hamilton, New Zealand

7<sup>th</sup> October 2008

Mr. Patilias Gamato  
Administrator  
Morobe Provincial Administration  
P.O.BOX 572  
Lae  
Morobe Province  
PNG

Dear Mr. Gamato

I am writing to inform you about the main activities that will be involved in this research.

The main activities will be conducting in-depth interviews and the focus group discussion with the villagers. I am planning to conduct in-depth interviews with one to five officials from;

- Morobe Provincial Government,
- 'NAKUWI' Landowners Association,
- Harmony Gold Limited and
- Conducting focus group discussions with the villagers of Nauti, Kuembu and Winima.

The above are the main activities that will be carried out during the research. I need your assistance in identifying five Morobe Provincial Government officials that were part of the Morobe Provincial Government team for the negotiation of the Hidden Valley/Hamata project.

I am also seeking your assistance in providing me a transport for this research and also write and advise the Wau/Bulolo District Administrator and the Council Managers for Wau Urban/Rural LLG for my research. I need the help of Wau Rural LLG Council manager to advise the ward councils of Nauti, Kuembu and Winima villages for my research. I need the Ward Councillors to assist me in identifying five to seven landowners for the focus group discussion.

Also based on the supervisor's letter, I need your assistance in providing me any official documents that will be valuable for my research, like the copy of the MOA/MOU signed in 2005. The formality of the research process will be followed after my application for the research ethic is approved by the University of Waikato's research ethics committee.

If need further information, I can be conducted on this mobile number: xxx.

Thankyou so much for your help and assistance.

Sincerely

Bernard Esonu