MINING IN THE CARAGA REGION, PHILIPPINES: INSIDERS' PERSPECTIVES ON EMERGENT SOCIAL AND ENVIRONMENTAL PROBLEMS

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ABSTRACT

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The Philippines, particularly the Taguibo River Watershed Forest Reserve (TRWFR) is home to some of the world's most abundant mineral ore deposits. Harnessing those nested natural resources for a developmental purpose is a complex task; posing potential positive or negative environmental and social impacts. The Philippine national government has adopted several forms of decentralization with the aim to give more discretionary power to the local government units who are believed to hold the greatest capacity to be able to efficiently mobilize local natural resources for broad-based socio-economic development.

Region XIII is home to the Taguibo watershed, and also to local government units and line agencies which lack extensive horizontal coordination or integration. This can prevent synergies between mining, livelihoods and sustainable development efforts from occurring.

Four main institutional arrangements help to conceptualize the drivers of the asymmetric conflict found in the TRWFR: *resource tenure* and *property rights*; *decentralization of resource management*; *captured power*, and *political rivalry*; and *fragmentation of authority*. Regardless of the fact that there are extensive environmental and human risk management laws the local resource base results in a curse rather than a blessing. Campaign support has more clout in the Caraga Region than legal permit; therefore, what is illegal is made legal in the Caraga Region.

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Introduction

In order to make nature a source of prosperity and wealth for the collective community, a few governance structures are required to achieve such a 'blessing'. Such structures include: policies and laws that protect the rights of the marginalized peoples, coupled with responsive institutions that align with the livelihood needs of the local community members. Without a clear understanding of the dynamic links between natural resource endowments, resource extraction, development institutions, governance structures and broad-based socio-economic development measures; the presence of high-value natural resources can actually be detrimental to those communities. Such resources can provide a target for exploitation by local politicians, outside businessmen, and multinational corporations. Too often, the result of extraction operations is that most of the revenues are appropriated by outsiders', leaving the community-and local ecosystems- worse off than they were prior to the 'development' (Holden and Jacobson, 2006).

There is a dense body of literature that suggests that significant economic development will occur in geographic locations that have favorable natural resource endowments (Auty, 1985; 1998). A more recent influx of evidence, however, suggests that resource rich countries that are export oriented and dependent on imports, foreign investment and ground taxes tend to witness a counter-intuitive outcome known as the resource curse theory (Auty, 1998). Auty (1998) defines the resource curse theory as the observation that nations with rich natural resource endowments (oil, timber, minerals) often dramatically underperform economically relative to what is expected. It is assumed that those countries which are blessed with an abundance of natural resources should be more prosperous compared to less endowed nations. The resource curse literature focuses strongly on the problems rather than the solutions. Therefore, current literature

is not of much practical help in designing more realistic and integrated natural resource management policies or filling gaps in knowledge. For example, what changes an apparently 'un-successful' system to one that does work?

Some developers and environmentalists advocate for community-based natural resource management (CBNRM). Decentralization is a potentially promising pathway to reach the target of devolving nationally seated power to local authorities for more effective CBNRM reforms (Ribot, 2002). However, many scholars point out that more current "decentralization' reforms are characterized by insufficient transfer of powers to local institutions (Ribot, 2002; ICMM, 2006). The fact that many local government units lack proper capacity to receive new discretionary power allows those local institutions some discretion to adjust national plans to fit the local contexts. This room for maneuvering varies greatly from region to region (Martinussen, 1999). Nevertheless, some lessons and recommendations can be derived from the decentralization reforms that have taken place in various locations around the world in order to deal with some of the common corruption problems associated with decentralization reforms amid the extractive industry.

This thesis examines key governance conditions that influence whether abundant natural resources become a source of wealth and property for many, or merely a select few. It analyzes four main overarching governance factors in the context of the extractive industry in the Philippines: *resource tenure* and *property rights*; *decentralization of resource management*; *captured power,* and *political rivalry*; and *fragmentation of authority*. The research combines an in-depth literature review with semi-formal interviews and participant observations to provide insight into the resource curse and decentralization literature. This inquiry is guided by four

emergent hypotheses in the natural resource curse sciences regarding the relationships between institutions, decentralization, and the problems of corruption; all within the context of mineral mining. The main questions this inquiry attempts to address are:

- Why do those who hold power in badly performing systems (such as the Caraga Region, Philippines) lack the incentives, motives and/or capacity to change institutions and governance structures and improve broad based socio-economic conditions of the host region, and their own long-term welfare?
- How does the mining sector overall contribute to national development amid decentralization?
- What are the practical and policy implications for mining companies, government units, development institutions and non-government organizations (NGOs)?
- What might the distinct suggestions be for these development partners to continuously implement the findings and recommendations provided through participatory means?

This paper is organized into three broad sections. An overview of the literature associated with the decentralization of natural resources in the historical context of the Caraga Region, Philippines will be addressed first. The historical context sets the stage to conceptualize the dominant institutional arrangements regarding the natural resource- based management through the lens of the insider. The second section will address the findings from the infield inquiry related to the emergent research questions. Finally, the last section will present conclusions and suggestions for future improvements for more adaptive natural resource-based management in the Caraga Region.

Justification for the Study

Destructive mining at the expense of the local ecosystem services and communities is not unique to the Philippines, but rather common in other developing countries such as India and Nigeria (ICMM a, 2006). It is believed that the significant findings from this study may potentially be helpful in understanding the impacts of decentralization on the extractive industry by using the Caraga Region-the mining capital of the Philippines- as a specific case study. The inquiry will gain a more holistic understanding as to why this mineral endowed regions has fallen victom to the resource curse. The question of inquiry then becomes, what makes this community unable to achieve broad-based socio-economic development amid mineral mining?

Dr. Jim Jarvie, with Associates in Rural Development, Inc (ARD), states that natural resources-based conflict (NRC) typologies are rooted in the exploitation of natural resources or competition for natural resources (USAID, 2004). Dr. Jarvie noted that the main conflict participants are communities, companies, governments, security forces, gangs and rebels. While prevention is better than a cure, solutions to these conflicts must be locally appropriate. There are no "silver bullets" (USAID, 2004). Based on Dr. Jarvie's survey of NRC, most of the conflicts in the Philippines are caused by conflicting policies and laws as well as incompatible interests among stakeholder participants. However, due to very limited reporting of NRCs in the media, there is little information available to assess the true extent of the problem in the Philippines as a whole (USAID, 2004; ICMM a, 2006). Thus, the complex and interrelated stories provided by local stakeholders will help aid in dispelling misconceptions related to this multifaceted NRC in the Caraga Region.

There are plenty of laws in place in the Caraga Region, which address the proper management of renewable and non-renewable natural resource use, their extraction and transportation in an environmentally friendly and sustainable manner. However, various illegal activities continue to occur that are both environmentally risky and potentially hazardous to humans health. The declining quality and quantity of potable water is posing disastrous effects on the humans living in the Caraga Region, particularly in the Butuan City and Anticala areas (Fact Finding Report, 2009). Some of the disastrous effects stem from the mining and logging industries and include but are not limited to: unsafe water levels such as high and frequent occurrence of turbidity (5 NTU) [1] and Mn (.04mg/L). These levels at times exceed the legal limits, thus, forcing the BCWD to shut off water supply to over 300,000 Butuan City residents. As water quality levels exceed legal limits, potable water supplies to the city must be shut off, sometimes for up to 2 to 3 days. The lack of a steady and clean water supply can potentially lead to serious sanitation issues, not to mention causing residents to get very angry with the LGU's ability to effectively manage the city's necessary infrastructure. Especially during periods of heavy rains, turbidity levels exceed legal limits forcing BCWD to shut down Butuan City's potable water source (BCWD lab sample no. 10-06-360; 10-01-029). It is apparent that human activities, mainly road rehabilitation lacking proper drainage technology, timber harvesting and mining activities greatly contribute to this point source pollution in the Taguibo River.

Many developing countries that are rich in mineral endowments like the Philippines, often confront trade-offs in the resource paradox. These trade-offs make it crucial that current system regulations and institutions (NGO's, social, political-governmental, academic etc.) are

[1] NTU+ Nephelometric Turbidity Unites

scrutinized in a scientifically rigorous way that aims to evaluate and serve all sectors of the society for community purposes not for individual purposes.

The Philippines is classified as housing some of the most environmentally degraded and poorest areas found in South East Asia; yet on the other side, the country is reported to be the second most mineralized country in the world (Llave, 2004). These contradictory characteristics illustrate the fact that amid armed conflict and government corruption lucrative operations like mining exist but fail to benefit those marginalized communities who tend to bear the majority of the social and environmental costs associated with mining operations (Auty, 2000; Bebbington et al., 2009; Bury, 2004; ICMM, 2006; de Echave, 2005).

Mining companies follow the 'rules of the game'. That is, they are acting to maximize their returns on investment. If there is no risk of getting caught at a checkpoint for not providing authority figures with the proper mineral transport permit, then why would individuals acquire a permit in the first place? It is important to note that these mining companies are just following the policies and institutions in place in the host communities. If laws and mandates are not strictly and fairly enforced, it's not expected that mining officials will spend the extra time and money obtaining proper permits. The mining officials are just doing what the policy-makers and government enforcement officers allow them to do. The lack of capacity on the part of the LGU's is one cause of the system malfunction throughout the Caraga Region. This system flaw allows for mining companies to break environmental and health laws with no repercussions (personal interview, 07-01-3A, 2010). When the individuals responsible for protecting the environment are the ones responsible for hurting the environment, it becomes very difficult to

sustainably manage the community-based natural resources in a community (personal interview, 06-26-2A, 2010).

Unfortunately, conflicting mandates and inadequate ability to implement environmental regulations in this region have resulted in the community becoming plagued with government corruption, unsafe living conditions (no water, landslides, and illness) and loss of sustained livelihood options. Thus, the future of the region is dependent upon the implementation of an integrated management plan that is successful in implementing principles of sustainable development which promote the existence of a viable future for generations to come.

Resource Curse-Unsatisfactory Outcomes

The extractive industry literature presents and incomplete basis for identifying valuable governance structures that result in positive outcomes around natural resource extraction. This information is crucial when aiming to create improved policies which are more effective at coping with resource curse problems (Sachs and Warner, 1997). This is confirmed by a brief review of the three main approaches used in the established literature to explain why natural resource exploitation sometimes leads to unsatisfactory outcomes.

Approach 1-basic macroeconomic perspective

From the 1950s to the 1970s, the question of resource wealth was at the center of debates between mainstream development scholars and their Marxist and non-Marxist critics (Dalton, 2006). The basic macroeconomic analysis suggests that the discovery and extraction of natural resources should contribute to higher incomes and faster economic growth in developing countries in a straightforward way (Auty, 2001, 1998). However, the mainstream economic literature recognizes that revenues from resource extraction can have detrimental macroeconomic effects on the hosting economies. Such impacts include but are not limited to: Dutch disease

(Auty, 1998; Sachs and Warner, 1997), greater volatility in public revenues (Auty, 1998; Mikesell, 1997), and crowding out of some traditional economic activities (Corden and Neary, 1982).

More recently, economic policy makers have learned that locally appropriate policies that are responsive to the historical/cultural context can help to eliminate or mitigate these negative effects (Esteves, 2008). However, other countries have failed to do so; such as Congo and Nigeria. The question no longer is what the required governance structures are, but why countries have failed to apply those needed governance structures where revenues from resource extraction are anticipated to act as a catalyst for other non-extractive sectors in the economy. Therefore, macroeconomic analysis is silent on what causes these differences in the policy environment.

Approximately fifteen years ago, there were relatively few resource curse experts discussing the Dutch disease or other problems arising from mineral revenues. Thus, the resource curse in many cases was often times ignored. Today that is not so, and these challenges are well known and well understood (Auty, 2001). It is hard to believe that even those countries lacking sufficient governance capacity could not seek outside assistance to implement the required governance structures.

Approach 2- Rent-seeking Perspective

Proponents of the rent-seeking perspective, such as Collier and Hoeffler (2001) and Humphreys (2003), quantitatively created evidence that natural resource endowments often coincide with predatory governments and a high incidence of domestic conflict and civil wars. This one perspective suggests that natural resource extraction is inherently detrimental to the welfare of developing countries (Dalton, 2006). Another proposition is that the microeconomic

implications of natural resource abundance suggest that it nurtures patronage, rent-seeking and asymmetric power struggles, resulting in policy outcomes that prevent sustainable development, and provoke social unrest and environmental distress (Dalton, 2006). It also encourages misguided institutional arrangements in the economic system resulting in mineral revenues not being reinvested back into the economy to act as a catalyst in other non-extraction sectors of the economy for broad-based socio-economic development (Auty, 1998). Mineral revenues (collected from legal operations only) first accumulate at the state or local government level and therefore, the local context, governance structures and level of corruption are important to incorporate in the analysis of the outcomes of natural resource extraction. However, the analysis is silent on what explains the different outcomes in different countries.

Approach 3- Corporate responsibility Perspective

During the past few years a significant number of companies, including those in mining, have supported a wide range of corporate responsibility initiatives. The aim of these initiatives is to mitigate negative social and environmental impacts. Emphasis has been placed on a participatory, bottom-up approach, which strives to create lasting relationships between the multinational corporations, local communities and hosting governments (Bebbington, et al., 2009). The 'corporate social responsibility approach' may appear to work in some local contexts, while performance in other cases is still disappointing (ICMM b, 2006).

All three approaches lack a coherent argument which explains what some of the differences in outcomes are between countries that suffer from the resource curse and those that have benefited from broad-based socioeconomic development (ICMM b, 2006). Many experts have carried out cross-county econometric analyses which offer fairly compelling evidence of how some countries have avoided the resource curse (Stevens, 2003; Saffar and Jiwanji, 2001; Wright and

Czelusta, 2003; Acemoglu et al., 2003). Among the most frequently referenced cases are Australia, Canada, Chile, Indonesia, Malaysia and Norway. Cross-country econometric analyses refer to these cases as outliers, therefore ignoring the lessons that could potentially be taken away by comparing and contrasting the experiences from the successful with the less successful countries (ICMM b, 2006).

In thinking about the three approaches, a question arises: what factors allow some countries to benefit from resource endowments and avoid the resource curse? The natural resource literature aggregates the answer into the level of quality represented in three broad factors: *institutions*, *governance* and *policies*. Moreover, research in the mineral extraction discipline assumes that the different outcomes have much to do with governance and institutions. If a country fails to take advantage of the mineral resources, the fault arguably lies in the hands of the government and other public entities. It is the government and public entities who ultimately decide how those mineral revenues are spent.

No one single explanation can describe why some countries avoid the resource curse and others don't. Therefore, the aim of inquiry must be to bring a more dynamic perspective into the extractive industry analysis (ICMM b, 2006). It is not just a question of what the factor or mechanism was which led to a curse, but more important to understand the gray areas behind the social, economic and environmental aspects of the case study. It is also a question of why certain actions or lack of actions was allowed to happen over time. The lack of clarity regarding what actually happens in cases of a resource curse, leads to equally elusive treatment mechanisms. When the problem is not clearly defined, it is very hard to construct integrated management practices.

Decentralization Objectives

The term 'decentralization' has been used to encompass a variety of alternative institutional and financial arrangements aimed at harnessing the abilities, knowledge and incentives of rural people to improve the distribution of power and efficiency in resource utilization (Martinussen, 1999 pg 211). Decentralization related to utilizing natural resources attempts to provide broad development by increasing rural communities' capacity to benefit from the use of local natural resources (Auty, 2001). However, the lack of clarity as to how exactly the step-down-of power (national levels to the local levels) will be executed often times results in elusive treatment mechanisms that have varying outcomes (Holden and Jacobson, 2006).

One of the main pathways of decentralization is *devolution*. This is based on the idea that political power and legitimacy originally and logically belong to the national level. Power is transferred to the regional or local governments allowing them to use their own discretionary authority (Martinussen, 1999). The purpose of *devolution* is "increasing local resource mobilization as part of overall resource generation for development; provisions of better services and local infrastructure; more efficient utilization of resources; and more generally increasing total government capacity to facilitate and promote economic, social and human development" (Martinussen, 1999 pg 213). However, potential positive or negative trade-offs exist among the multiple objectives listed above. Therefore, achieving a high degree of devolution may or may not be conducive to improving efficiency in resource utilization (Martinussen, 1999; Benjamin, 2008). In context of this thesis, these trade-offs lead to the debate on the institutional arrangements, manpower capacities and increased impact local government corruption potentially has on local resource utilization and mobilization.

Decentralization requires power transfer to meet two main categories: effectiveness and efficiency. "Effectiveness, that is the degree to which a stated objective or condition is achieved or maintained; and efficiency, which refers to the quantity of resources expended in the effort to achieve a stated objective or condition." (Martinussem, 1999 pg 214). This theory basically aims for cost minimization for attaining specific targets. However, another category often times used by development researchers is the criteria of responsiveness. This refers to the degree of accountability which, in turn, requires transparency and access to decision-making as seen from the collective citizens' point of view (Martinussen, 1999).

The security of resource tenure and property rights is another important governance factor which impacts the capacity of local communities to derive environmental income from abundant local natural resources. An individual or community's rights, access and holding of land and other natural resources defines their tenure. Legally, tenure is a collection of both rights and obligations: the rights to own, hold, manage, transfer, or exploit natural resources and land, but also the obligation not to use these in a way that negatively impacts others (Bruce, 1998). However, tenure is not only bound by legal concepts but also by complex social institutions, often incorporating the local historical and cultural context. Moreover, the lack of security regarding tenure systems can lead to negative and complicated outcomes (Ribot, 2002).

Role of decentralization in development

Decentralization has emerged as a frequently recommended solution to a number of problems pertaining to resource management in many developing countries. From the 1980s to the mid 1990s, national governments in 63 out of 75 developing and transitional countries have proposed some form of decentralization strategy (Agrawal, A. and J. Ribbot 1999). Decentralization is

defined as “any act in which a central government formally cedes powers to actors and institutions at lower levels in a political-administrative and territorial hierarchy” (Ribot, 2002, pg. 10). Decentralization is also viewed as the redistribution of power, resources and administrative capacities to different sectors of government and local people, which in essence brings power closer to the people most affected by the exercise of such powers (Agrawal and Ostrom, 2001). Decentralization is also increasingly being recommended as a panacea in development practices (Knox and Meinzen-Dick, 2001). For instance, the number and scope of World Bank projects that are “community driven or community based” have largely increased from 2000 to 2003 (World Bank 2005). The Philippines has also decided to experiment with decentralization in the mining sector. The government has attempted to dispense regulatory powers to more local levels of authority such as the Department of Environment and Natural Resources (DENR) and the City Environment and Natural Resource Office (CENRO).

Scholars identify two main forms of decentralization: administrative and political. Administrative decentralization refers to the transfer of resources and power to local bodies, who constitute an administrative extension of the central state, and are upwardly accountable to the central government. On the other hand, political or democratic decentralization is seen as a transfer of power and resources to lower levels of authority that are largely independent of central government. This form of decentralization promotes popular participation in decision making through election of local representatives, which makes them downwardly accountable (Hutchcroft, 2001; Ribot, 2002). Both forms of decentralization set up greater powers that aim to enhance democracy, utilize indigenous or experiential knowledge from communities, and reduce the need for unpopular regulatory intervention by federal governments. Even so, in the case of natural resource management (NRM), democratic decentralization represents the ideal form of

decentralization because it involves the necessary democratic process that encourages local authorities, to whom power is transferred, to serve the needs of their constituents (Ribot, 2002).

Advocacy for decentralization has primarily been based on the rationale that decentralization promotes efficiency in resource management, and also ensures just and equitable distribution of benefits especially to marginalized people (Carlson and Berkes, 2003; Larson et al., 2007; Ribot, 2002). Economically, local people bear the direct political and economic consequences of their decision-makers' decisions, and have more incentive to internalize all externalities relative to an outsider who may have no direct interest. Therefore, assigning 'control rights' to local institutions through decentralization may potentially result in effective decisions that meet socioeconomic needs and are well suited to the communities' local setting (World Bank, 2000). In addition, since local communities have the tendency to filter, or ignore, rules imposed from outside agencies (Agrawal, 2002; Nkonya et al., 2008), encouraging participation in decision making via decentralization has the potential to increase the compliance rate of development projects with local environmental regulations. Decentralization is believed to increase public sector accountability and effectiveness by empowering the civic actors involved to serve as a check on state power, thereby promoting equitable distribution of benefits from resources and efficiency in management (Ribot, 2005).

Ostrom et al. (2002) highlight three basic conditions necessary for resource users to create and sustain effective resource management institutions. First, the users of the resource must be dependent enough on that resource that they are willing to invest time and energy to create new institutions. Second, users must have autonomy to devise and change rules. Third, at least a subset of users must be able to engage in direct communication with each other, including the opportunity to bargain amongst each other. Given these conditions, which institutional design

they will choose and the performance and survival of that design is a function of the specific characteristics of the resource, the resource users, and the repertoire of institutional rules considered. Research in common-pool resources, however, has shown that no single institutional form is best at maintaining resources across a wide range of physical and social conditions.

In sum, it could be inferred from the foregoing discussion that an idealized decentralization scheme should at least include (1) complete transfer of power from national to more localized users (2) capacity building of those to whom power is transferred (3) participation of people who are directly affected by decisions.

Decentralization of mineral governance in Philippines

During the early 1990s, the Philippine government experimented with decentralization as part of efforts to use virgin natural mineral resources as a source of national development (Holden and Jacobson, 2006). The ability of the Philippine mining industry to act as a catalyst for economic development became viewed as underutilized (Otto, 1992). The Asian Development Bank argued that the investment climate in the Philippines was viewed by the global mining industry as negative and called for the decentralization of the nation's natural resource regulating bodies (Rovillos et al., 2003). The Asian Development Bank, specifically, took issue with the provision of Section 2, of Article XII of the Philippine Constitution of 1987 which limited the extent of foreign investment in mining projects to no more than 40 percent of the total investment in the project (Rovillos et al., 2003). In turn, the Philippine government acted upon the Asian Development Bank's advice; in 1989 emphasizing methods to increase foreign access to the nation's mineral resources as a method of increasing economic growth (Rovillos et al., 2003). Former President Ramos signed into law the Republic Act No. 7942 also referred to as the Mining Act of 1995.

After Marcos left office, lenders like the International Monetary Fund (IMF) and the Asian Development Bank (ADB) became panicked about the uncertainty in repayment of the international loans that had been squandered during Marcos' administration (Schirmer and Shalom, 1987). The subsequent president, Corazon Aquino, was therefore pressured to open the economy to foreign investment so that tax revenues could be collected from the influx of mining operations (Rovillos et al., 2003). There was a very pro-foreign investment (and pro-deregulation) atmosphere in the Philippines post-Marcos (Rovillow et al., 2003; Holden and Jacobson, 2006). Following the "People Power" revolution of 1986, President Corazon Aquino sought to "institutionalize people empowerment at the local level and pave the way for local democratic development" (Cristobal, 1997, pg. 258). The 1987 constitution was specifically designed to increase the powers given to the local government units throughout the Philippine archipelago. Specifically, section 1 of article X of the 1987 constitution delineated the local government units as being the province, the city, the municipality, and the barangay [2] (Holden and Jacobson, 2006). In addition, section 3 of article X of the 1987 Constitution called for Congress to formally endorse local government legislation (Holden and Jacobson, 2006).

Finally, in 1991, the Philippine congress passed the Local Government Codes, also known as the Republic act No. 7160, which became the statutory basis for the decentralization policy (Angeles and Gurstein, 2000). It is believed that the Local Government Codes of 1991 is one of the most influential statutes ever passed in the Philippines, and the Local Government Codes are referred to by many as "the decentralization codes" (Aldaba, 2002; Angeles and Gurstein, 2000). By the mid to late 1990s the Government of the Philippines had decentralized its political powers, and at

[2] A barangay is a form of submunicipal government similar to a village or a neighborhood.

the same time had drafted a development plan highlighting a mineral resource extraction strategy (Aldaba, 2002).

In recent years, as part of the Philippines' neoliberal development paradigm, the Government of the Philippines has engaged in efforts to encourage the extraction of the nation's mineral resources. The restructuring of the mining industry since the mid 1980s and, in particular, the Mining Act of 1995, underscores the government's aim to become a world market for minerals and to attract foreign investors in order to foster broad-based socio-economic development. The government, by opening the market and enticing foreign capital through industrial deregulation and liberalization measures, has opened certain industries to foreign ownership, raised foreign-equity participation, and provided incentives for investment in the nations' mining industry (Aldaba, 2002).

Under the 2010 to 2014 Philippines Investment Promotion Plan (PIIP), thirteen (13) different investment promotion agencies (IPAs) will synchronize their market strategies into one medium-term marketing development plan (Trade Union, 2011). An integral component of the plan is to increase foreign investment in thirteen total investment promotion agencies (IPAs), by targeting one of the dominant sectors – the mining industry (Manila Times, 2011). The plan aims to more than double the current investment approvals to bring in PhP [3] 658 billion at the end of 2014 or an accumulated PhP2.405 trillion in five years. According to the National Statistics Office (NSO), Philippine mineral exports from January to December 2010 increased by 33.7-percent to $51.393 billion from the $38.436 billion registered in 2009 (Olchondra, 2011). The top exporting destinations were Japan, with a 15.4-percent share of total exports; China, accounting

[3] PhP=Philippine Peso

for 14.3-percent of shipments; the United States, accounting for 13.6-percent share of total exports; and Singapore with 10.8-percent of total exports shipped (NSO, 2011).

Overall, the process of decentralization is one that can affect the mining industry and, in some cases, the goals and priorities of local governments may conflict with those of the central Government (Labonne, 1999). The national government aimed to devolve regulatory powers to local government agencies. Regarding the extractive industry, the intention was for more power to be vested in local government units resulting in more efficient, effective and responsive business environments which in turn would lead to economic growth.

Purpose of Research

Globally the mining industry is booming. The price of most metallic minerals is at an all time high (Singhal, 2007). China, Japan, Canada, Australia and the United States are some of the top power houses of current economic growth. These countries are providing the bulk of the impetus for the expansion in the global consumption which generates growth in the mining industries. In recent years many countries in the developing world have responded to these global trends, driving the expansion of mining by pronouncing policy efforts to attract foreign direct investment into the mining sector of the host country's economy (Bridge, 2004). At the same time, a majority of developing counties has implemented some form of decentralization, and many have decentralized some aspect of natural resources management (NRM) (Agrawal and Ostrom, 2001). "This economic growth offers the potential to generate new resources for

development, but also creates challenges to the sustainability [4] in the regions where the mineral extraction occurs" (Bebbington and Bury, 2009 pg 17,296).

High commodity prices are encouraging many countries to examine the potential of their mining industry. One such country is the Philippines. The Philippines, a global center of mining expansion, serves as an exemplar for analyzing the effects of decentralization, particularly in the extractive industry, on the customary natural resource management (NRM) institutions and quality of development achieved where mineral extraction occurs. Many environmental conflicts can be categorized as institutional challenges, or debates, over distribution and regulation of natural resource assets. 'Who gets how much water and when?' or 'who must do what and when?' are questions characteristic of such conflicts. Such typical arguments are as follows: downstream rice farmer A believes she is entitled to more water than upstream irrigator 'B', and corporate 'F' does not want to internalize some of the externality costs associated with pollution mitigation equipment that would benefit the local communities. 'Institution' is used here (following Thompson, 1995: 1545) to refer to a particular organization, such as non-governmental organization (NGO), government department, university or training institutes; and

[4] In the framework of this thesis the meaning of sustainability is adopted from Herman E. Daly (1990). In short, sustainability shall be thought of as "qualitative development of non-growing systems" which extends over long periods of time (pg 1). Growth is quantitative, an increase in a physical (measurable) scale, while development is qualitative improvement or unfolding of potentials (Daly, 1990 pg 1). A human body grows for a finite amount of years (until mid to late 20's), but the human brain can continue to develop until its death. The same is true for an economy. Thus, sustainability in the context of natural resource management follows two main principles: first that harvest rates should equal regeneration rates, and second, that waste emission rates should equal the natural assimilative capacities of the ecosystems into which the wastes are emitted (Daly, 1990 pg 2). Regenerative and assimilative capacities must be treated as natural capital, and failure to maintain these capacities must be treated as capital consumption, and therefore, not sustainable (Pearce, 1988).

also to mean rules-in-use, referring to working rules, procedures and norms expressed in repeated activities and relationships between individuals in organizations.

The mineral extraction in the Taguibo River Watershed Forest Reserve (TRWFR) is a prime example of environmental degradation which is made worse by the fact that the key actors are so intertwined, making it very difficult to identify the players. This as it is comprised of various overlapping land tenure systems such as the Certificate of Ancestral Domain Claim (CADC) No. 178, Manobo-Mamanwa Tribal Communities Development Cooperative Certificate No. 7022, the Kablay Tree Planters Association Inc. Certificate No. 70009 and the Anticala Tribal Sellers Association Certificate No. 70007. In addition this area is also a proclaimed watershed (Proclamation No. 1076) housing Butuan City Water District's (BCWD) Infiltration Gallery, which supplies potable water to over 300,000 residents in the Butuan City area (personal interview 06-26-2A, 2010).

Two needs were emphasized by the Caraga Region community as highly important. One was the protection of the Taguibo Watershed ecosystem and services to be able to sustain upland and lowland livelihoods now and into the future. The second was to try to understand some of the knowledge gaps around government agencies or public entities are responsible for utilizing mineral resources for broad-based socio-economic development. The aim is to examine this complex dynamic sustainability problem from the perspectives of those directly or indirectly impacted by the illegal activities. With the ultimate aim to more holistically understand the complex dynamic nature of the institutional arrangements found within the natural resource extraction system to more effectively prevent environmental degradation within the Taguibo River Watershed Forest Reserve (TRWFR), Philippines.

A wide range of stakeholders were interviewed in hopes of identifying relevant solutions to some of the social and environmental problems associated with the structural problems found in the Caraga Region. The field findings will be presented to the local university, Father Saturnino Urios University (FSUU). The purpose of the feedback is to provide interested individuals with a source of credible and transparent information. These interviews provide insiders' conceptualizations of the natural resource conflicts around soil, water and timber degradation which is occurring in the Taguibo River Watershed Forest Reserve (TRWFR).

This qualitative research investigates the trends and conditions related to the perceived impacts of small-scale mining operations on local river quality and livelihood assets in rural upland and downstream urban communities.

Qualitative inquiry is used to give voice to underrepresented stakeholders. Perceptions of how the illegal activities impacted their livelihood assets and the quality of water found in the Taguibo watershed over time were explored. Appendix I provides a table which summarizes the methods of data collection that were used, the objectives of each data collection activity, characteristics of the subject respondent site and the final output of the data collection activity.

The ultimate goal of this research is to gain a better understanding of the pressures that illegal mining and associated activities found within the TRWFR have on the diverse stakeholder groups from the Caraga Region. Perspectives from the different heterogeneous groups were solicited to conceptualize the dynamics and interconnected nature of the drivers of natural resource presence leading to a curse rather than a blessing in the TRWFR. Emphasis was placed on seeking out the causes of the different problematic behaviors instead of proposing solutions.

Emergent Research Questions

Specifically the study sought to answer these questions:

1. What are the perceived human-environment impacts of small-scale mining operations in the Caraga Region?
2. What are insiders' perspectives on the perceived institutional challenges which explain these impacts?
3. What are insiders' suggestions for possible pathways and institutional arrangements that might foster local sustainable development in the presence of mining?

The results of this case study can provide insight regarding the dynamic possibilities associated with socio-economic outcomes related to natural resource utilization. This insight will not only inform future research in the Caraga Region regarding other mineral operations, but also may help when addressing structural causes for some of the region's conflicts that result in poor economic development and the exploitative depletion of the region's natural resources (Fisher, 2000). Moreover, this study may contribute to the local decision making process, providing a credible source of insiders' perspectives and knowledge regarding the social and environmental impacts associated with small-scale mining operations nested in the TRWFR. The remainder of the first section consists of a detailed description of the methodology employed and a presentation of the theories and concepts used for the analysis. Questions presented above serve as a framework to shape the discussion of lessons learned from this research.

Context of the Natural Resource Extraction Industry in Caraga Region, Northeast Mindanao

The mining potential of the Caraga Region is substantial, as the region holds reserves of precious metals (gold and silver), base metals (copper, mercury and lead) and light minerals (bauxite and

manganese) (Mines and Geosciences Bureau (MGB), 2010). The mining and quarrying sector are steadily declining in performance, despite the fact that the Region is among the richest source of minerals in the country (NEDA, 2004). According to the Philippines Yearbook for 2003, Caraga had the 2nd highest metallic mineral production valued at PhP 1.25 billion (PSY, 2003) in 2001. Based on the density of deposits per square kilometer of land area, the Caraga Region has been identified as Asia's mining capital (Corrales, 2009). While there is a growing emphasis placed on the role of mining as the engine for growth in northeastern Mindanao, very little is known about how to create functioning public institutions that will allow anchored, broad-based socio-economic development to occur (Woolcock et al., 2001). Important institutional challenges exist in this region which prevents equitable allocation of the mineral revenues from achieving the optimistic development goals set forth by the Philippine Federal Government.

Political rivalry between different levels of government agencies, the elite capture of the economic wealth derived from the unfair allocation of natural resources, as well as political power control of dynastic clans are important stumbling blocks which contribute to the dynamics of natural resource conflict in the Caraga Region (personal interview 07-27-12A, 2010). Natural resource conflict (NRC) in this area also stems from overlapping mandates of the different agencies dealing with natural resource management. Fragmentation of the responsibilities and authority of government agencies and public entities further challenges integrated management plans from being successful (personal interview: 07-27-12A, 2010; 07-26-2C, 2010; 07-08-6AA, 2010; and 07-20-13A, 2010). The conflicts found in the Caraga Region appear to be overlapping, interrelated and based upon root causes such as social and economic injustice, poor governance, corruption and incompatible laws. However, the ideological reasons for the conflicts vary. The struggle for self-determination is important for parts of the independent

urbanized city barangay populations, but seems to have less priority for the socialist indigenous populations. The indigenous peoples (IPs) struggle more for substantial nationwide political reform (Corrales, 2009).

Values and culture play a complex and dynamic role in natural resource based disputes. This is especially true for tenure systems in the Caraga Region. The dominant religion in Caraga (and throughout the Philippines) is Roman Catholicism, and the main ethnic inhabitants in the region are called Lumad. The term Lumad includes many tribal groups such as the Manobo and Mamanwa Tribes who reside on Mindanao Island. It is common in these tribal communities to practice reciprocity and communal sharing of farm products and economic royalties (personal interview 07-30-8A, 2010). Religion plays an important role in all aspects of community life in Caraga. During government activities such as oath taking ceremonies and investment meetings, various religious leaders from the region are present to provide blessings to those involved (participant observation 06-30-3B, 2010).

For the Lumad, subsistence farming practices have been part of their institutional traditions for many years, and sustainable harvesting practices have been incorporated through passing down communal norms and practices. Over time it can be observed that these traditional ways of life are becoming 'watered-down'. As non-Lumad infiltrate the upland area and as Lumad emigrate from upland (watershed) to low-land areas (Butuan City) the Lumads' traditional language and cultural identity is being lost. As a result, traditional sustainable natural resource management is being replaced with non-socialists practices (personal interview 08-04-1A, 2010).

Regardless of the cultural and developmental changes that have taken place in the Caraga Region, to achieve equitable and anchored economic diversification, sustainability must be understood to its fullest. For some development experts, sustainability is seen as a 'process of planned change or managed learning rather than an outcome' (Sriskandarajah et al. 1991). The process of development needs to involve sustainability as a fundamental element in order to achieve open and respectful relationships between community members as learners and their environments. Robert Gilman, Director of the Context Institute, defines sustainability "as equity over time" or as a value "it refers to giving equal weight in your decisions to the future as well as the present. You may think of it as extending the *Golden Rule* through time, so that you do unto future generations as you would have them do unto you" (Gilman, 2011) To understand sustainability it is crucial to unearth the social and institutional arrangements that determine the degree to which different groups in a society have access to natural resources (Sarkar, 1998). Local communities and many non-government organizations (NGOs) concerned about development and environmental quality in the Philippines believe that the local and national governmental units should integrate mining revenues into poverty reduction funds (People, 2007; Dolye and McEachern, 1998; World Bank, 2009).

The idea that natural resources can be extracted from the earth's crust for economic growth purposes has been central to the Philippines for many years (Esteves, 2008). The Philippine government acted upon the Asian Development Bank's advice in 1989 to harness natural resources for economic development purposes. Officials from the Mines and Geosciences Bureau [5] (MGB) participated, along with the World Bank, in a seminar entitled, "Prospects from the Mining Industry to the Year 2000," organized by the United Nations Department of

[5] A line agency of the Department of Environment and Natural Resources (DENR)

Technical Cooperation and Development. At this meeting it was emphasized that increasing foreign access to the nation's mineral resources is a method of enhancing foreign direct investment and consequently, economic growth (Rovillos et al., 2003). In both 1991 and 1992, the MGB held a series of seminars in London, Manila, and Vancouver to encourage foreign mining companies to invest in the Philippines (United States Bureau of Mines, 1991; 1992). Then, in March of 1995, the presiding Philippine president, President Ramos signed into law Republic Act No. 7942 (United States Geological Survey, 1995) (Pye-Smith, 1997; United States Geological Survey, 1995). This led to substantial delegation of responsibility from national government agencies to local governments for regulating the mining industry. During the previous Marcos presidency, political power had been centralized to a much greater degree than in previous administrations (Weekley, 2001).

For many years this statute had been highly promoted by the Philippine mining industry through the Philippine Chamber of Mines. The most significant aspect of the act was its creation of new types of production agreements which would govern the mineral deposit ownership requirements under which a foreign mining corporation could operate in the Philippines (Holden, 2005).

The Philippine national government believes that through mineral mining operations, national economic development objectives can be achieved in the form of income, employment, exports, and the generation of tax revenues – all to be used to fund public capacity building initiatives (Humphreys et al., 2007). As pressure trickles down from the federal government to local governmental units to ramp up thirteen IPAs (investment promotion agencies), the Caraga Region is under added pressure due to the growing awareness of the region's mining potential. According to new statistical data on the mining tenements issued as of February 2009 by the

MGB, Caraga hosted 42 approved Mineral Production and Sharing Agreements (MPSA) covering 103,643.25 hectares or 55.29% of the entire mining permits approved in Mindanao (NSO, 2011). However, this supposed mining capital of Asia is still home to some of the poorest provinces in the country and the majority of these mining permits are within ancestral domains of the indigenous Manobo-Mamanwa tribes (Olchondra, 2011; personal interview with 07-27-12A, 2010).

History of Mining Rights for the Extraction of Mn Ore at the Taguibo Watershed

On the 17th of July 1979, the Associated Mining Corporation (ASMINCO) owned by Mr. Kittlestedt (a Filipino) was granted a mining lease contract (MLC) No. 185 located at Cabadbaran, Agusan del Norte (personal interview 7-27-12A, 2010). MLC No. 185 expired on the 16th July 2004. According to personal interviews with the MGB, low prices of metallic minerals in the world market resulted in ASMINCO stopping its mining operations before the expiration of its MLC. Consequently, Mn ore that was extracted before the company ceased operations never made it to the market for distribution. The mine operators chose to hold on to mineral ore stockpiles until market prices rose to more profitable levels (personal interview 7-27-12A 2010). The area where ASMINCO and others have stockpiled the already extracted Mn ore is within the Taguibo Watershed limits. Government officials believed this stockpiled ore to be a potential water quality and human health hazard. “These fine materials (heavy metals) are dangerous because once they are brought to the tributaries and the Taguibo River, well this is very dangerous if it gets into water” (personal interview 07-27-12A, 2010). In addition to MCL No. 185 there were subsequent mining applications. Sometime between 1992 to 1998, small-scale mining permits were issued within the area to McBern Mining Company, Mr. Gerardo G. Zerda and Mr. and Mrs. Cecilia Lucentalies, under the small-scale mining permits No.X-491, X-

1112 and X1122 respectively (RM-M-05-08-828, 2005). These permits were issued after the former Philippine President Fidel V. Ramos declared the Taguibo watershed a protected area under the Presidential Proclamation No. 1076 on September 4th, 1997; clearly stating that the area is:

Established as the Taguibo River Watershed Forest Reserve (TRWFR) for the purpose of protection, maintenance and improvement of its water yield and providing restraining mechanism for inappropriate forest exploitation and land-use practices,

The implementation of forestry development programs consistent with the objectives of the proclamations as may be determined by the Secretary of Environment and Natural Resources,

The reservation shall be under the administrative jurisdiction, supervision and control of DENR in coordination with Butuan City Water District (BCWD) and other agencies. A Watershed Management Council shall be crafted and act as the policy making body over the Watershed Area. The Council is composed of all concerned government agencies and Non-Government Organizations (NGO's).

Memorandum No. 34302, November 24, 1997

Proclamation 1076, makes the areas covered within the TRWFR closed to any mining operation pursuant to R.A. No. 7942 (Philippine Mining Act of 1995). As section 18- *Areas open to Mining Operations*- in the R.A. 7942, the Mining Act states:

Subject to any existing rights or reservations and prior agreements of all parties, all mineral resources in public or private lands, including timber or forestlands as defined in existing laws shall be open to mineral agreements or financial or technical assistance agreement applications. Any conflicts that may arise under this provision shall be heard and resolved by the panel of arbitrators.

Whereas, section 19- *Areas Closed to Mining Applicants*- states: Mineral agreement or financial or technical assistance agreement applications shall not be allowed:

Paragraph (f): Old growth or virgin forests, proclaimed watershed forest reservations, wilderness areas, mangrove forests, mossy forests, national parks, provincial/municipal forests, parks, greenbelts, game refuge and bird sanctuaries as defined by law in areas expressly prohibited

under the National Integrated Protected Areas System (NIPAS) under Republic Act No. 7586, Department Administrative Order No. 25, series of 1992 and other laws.

As described in section 19 of the 1995 Mining Act, all previous mining permits granted pre-1997 that fell within the watershed limits were deemed expired. Regardless, the once actively mined area referred to as "Black Mountain" (personal interview 06-26-2A, 2010) is now by law completely off-limits to any sort of mining project. Black Mountain, part of the Taguibo Watershed is where three different illegal mining operations took place (personal interview 07-27-12A, 2010). On the 09th of August 2004, there was a drastic increase of demand for minerals on the international market, resulting in increased market prices (personal interview 07-27-12A, 2010; RD-M-05-08-828, 2005). When global mineral demand increased, small-scale mining company owners felt a sense of urgency to get mineral ore transport permits (OTP) granted. One way of reaping wealth from mineral ores is to acquire an OTP to transport various stockpiles of ore out of the watershed and to the market (personal interview 07-27-12A, 2010). These permits were desired to claim the already abandoned stockpiles of Mn ore within the watershed area (personal interview 07-27-12A, 2010).

Conversations with the EMB-DENR RO. No. XIII and the EMB-DENR RO. No. XIII suggested that previous mining licens contract owners may have stolen Mn ore from the watershed area. As outlined in a Memorandum of Agreements (MOA) on September the 27th of 2005 and signed by Secretary Michael T. Defensor and Governor Erlpe John M. Amante, the manganese ore stockpiled in the San Antonio, RTR, Agusan del Norte area, shall be disposed of by the Provincial Governor of Agusan del Norte and proceeds will be given to the same (personal interview 07-27-12A, 2010). Another MGB interviewee stated that the proceeds of the ore

disposal were to be utilized for the rehabilitation of the Taguibo Watershed (i.e. turbidity and other non-point source pollution control) as well as to meet the needs of infrastructure projects of the Provincial Government of Agusan del Norte (personal interview, 07-27-12A, 2010). However, as described in various interviews with the PENRO and the MGB RO. No. XIII, the mineral revenues never benefited the Provincial Government of Agusan del Norte. "Since the manganese was stolen the provincial government was not able to raise that money" (personal interview 07-08-6AA, 2010). Therefore, government agencies and public entities were unable to apply the mineral revenues to broad-based socio-economic development.

Research Process and Methods

General Overview

The emergent design of this inquiry was grounded in the research paradigm which holds that knowledge is generated or discovered in a particular context, and assumes active interaction between the researcher and the researched in generating understanding (Lincon and Gubba, 1994). The ontological standpoint that guided this work is that of constructivism. Bryman explains from this perspective the researcher acknowledges the importance of social leaders and presents the view that reality is in constant flux; dependent on personal experiences (Bryman, 2004). This reflexive approach was applied by the researcher in order to ensure flexibility throughout the study. In-depth interviews and participant observations are methods which are compatible with the emergent research design of this inquiry process. Interviews were audio recorded to facilitate note-taking and help add to the internal validity of this inquiry. Expanded notes following participant observations, and, where acceptable, written notes were quickly jotted down and photographs taken to capture the essence of the insiders' perspectives. The

various perspectives gathered represent the basis which enabled the researcher to present both empirical and value-laden interpretations of the institutional challenges present in the natural resource-based conflict in the TRWFR.

This inquiry aimed to solicit insiders' perspectives on the illegal operations which took place in the Caraga Region through participatory and collaborative methods. Therefore, semi-structured interviews, described by Bryman (2004), were employed as the data collection strategy during fieldwork to investigate the views and understanding of interviewees regarding the unit of study, that is the Taguibo Watershed management case (Bryman, 2004). Follow-up interviews occurred when time permitted to test the homogenous nature of stakeholder groups' perceptions. For this purpose an interview guide was developed. This guide contained the study's key information needs and main questions as well as more specific sub questions, which were used to direct the interview. Further detail on the interview topics and key questions can be found in Appendix II.

In addition, participant observations were also employed to further explore perceived impacts of the illegal small-scale mining operations and various associated illegal activities by being able to capture both verbal and non-verbal impacts. For example, I volunteered with the National Economic Development Authority (NEDA) Caraga Region XIII office and took part in a tree planting trip to a former metal mining site located on Mount Mayapay. The tree planting group consisted of volunteers from 'Habitat For Humanity: Florida' sector, several NEDA workers, and local indigenous community members from the mountain area. This particular participant observation allowed the researcher to visualize the physical impacts of small-scale surface mining on a steep mountainous area. In addition, spending time with men and women from the indigenous community allowed for me as the research to be submerged in their culture. Hauling

trees and shovels up the mountain with the indigenous community allows the researcher to understand just what a labor intensive task eating on a forming mining site can be.

Participant observations allowed the researcher to create more sophisticated questions to ask future interviewees about their perspectives related to more specific impacts such as water quality, livelihood priorities and assets. For example, interviews with Manobo tribal members exposed me to real life examples of economic hardships, which demonstrated high priorities placed by the indigenous communities on youth education and access to health care (personal interview, 08-04-1A, 2010). This information helped me to craft specific questions directed towards the Butuan City Water District (BCWD) to determine if any livelihood assistance programs have been deployed by this agency for the purpose of assisting indigenous communities impacted by BCWD activities.

Each interviewee is impacted by the watershed management decisions differently due to variations in diverse aspects such as moral values, ideological views of the world and material and economic circumstances; therefore customized interview guides were produced accordingly. A majority of the interviews were conducted in English and audio-recorded with consent of the interviewee as this allowed the researcher to focus on the conversation and the interviewee's answers and reactions (Bryman, 2004). For interviewees who did not speak English, a native speaking translator was used to facilitate dialogue. A brief summary of the key points of the interview was done afterwards. Additionally, each audio was analyzed thoroughly and entire conversations were transcribed into verbatim text.

Procedure

This inquiry was largely conducted in the Caraga Region, Philippines. Due to the international setting of the data collection process, resource and time constraints impacted the methodologies and timeline. The intermediary, a well known academic figure from Father Saturnino Urios University (FSUU), was known by the researcher before the investigation began, and was able to connect subjects with the researcher. This was particularly important due to the unfamiliarity of the area for the researcher. The intermediary, an FSUU affiliate, Lawyer, Butuan Resident, local business owner and proud mother of four children made the initial contact with the various governmental agencies and community stakeholders in the Butuan area. Additional contacts were made through networking at initial interviews and during participant observation events.

Staff members at the FSUU have been working on trying to understand the diverse issues surrounding mining in the TRWFR for years. This researcher was able to tap into the existing knowledge revenues in order to gain access to relevant and actively involved community residents. In addition, having the FSUU staff assist in creating initial connections allowed local people to vouch for the researcher's presence in the area, which in turn helped to validate a neutral academic reputation in this inquiry process.

Specific times and locations of interviews were established via fax and text messages as that was a culturally popular form of communication for all ages. Interviews were carried out in convenient locations such as the subject's place of employment, community centers or other public places such as the City Hall or the FSUU lobby. The purpose of this was to increase the interviewees' comfort level and provide subjects with sufficient privacy when they answered the interview questions.

Concepts which emerged from the in-depth interviews and participant observations helped to refine and redirect interview guides for subsequent interviewees. Follow-up interviews took place with two government agencies, the Provincial Department of Environment and Natural Resource Office (PENRO) and the Butuan City Water District (BCWD). This approach allowed for further details or clarifications to be obtained regarding the information mentioned during the initial face-to-face interviews. In order to increase the internal validity of the findings, a second and sometimes a third in-depth cultural interview was held with another interviewee from the same institution. Obtaining additional perspectives within the various homogenous groups helped to reflect a more nuanced viewpoint and test the saturation level regarding the perceived impacts of the illegal small-scale mining operations in the TRWFR.

Expanded notes and verbatim text generated from the data collection activities provided the starting point for continuous data analysis throughout the research process. Preliminary codes (with accompanying symbols, definitions, rules, and examples) related to interview concepts and themes were developed. Codes were used to extract data that directly related to the main research questions. The codes were then applied to the text of each unit of textual data collected in the field. Summary statements were then created to group together evidence that helps to answer each of the research questions. These summary statements were used to create conceptually clustered matrices for each of the research questions. The matrices facilitate easier visualizations of the similarities and differences in the perceptions held by the different homogenous groups included in this study. The matrices also helped to accentuate the important relationships among the interview statements, which were important in answering the research questions by providing the empirical evidence along with the credibility of that evidence.

Subject Population

The choice criteria for the subjects were any individuals who were currently employed municipal, provincial or regional workers from different agencies with a mandate related to the regulation or distribution of water or mineral ores. Such agencies include the: Department of Environment and Natural Resources (DENR); Environmental Management Bureau (EMB) and the Mines and Geosciences Bureau (MGB) - both line agencies of the DENR; Community Environment and Natural Resources Office (CENRO); Provincial Environment and Natural Resources (PENRO); Department of Tourism (DOT) in Butuan City; Butuan City Water District (BCWD); Local Government Units (LGUs) and the Department of the Interior and Local Government (DILG). In addition, local Butuan residents who drank water directly from the Taguibo River were interviewed along with tribal members identified by the National Council for Indigenous Peoples (NCIP) who rely on the natural resources nested in the TRWFR to sustain their livelihood needs. Those included in this study were at least eighteen years of age; male and female.

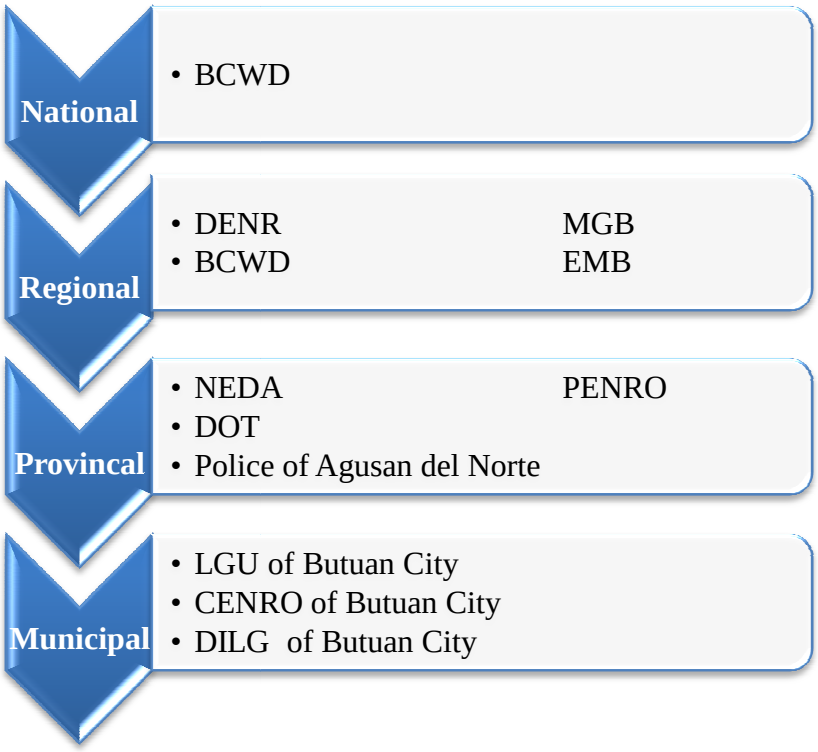

Figure 1 Hierarchy of Government Agencies involved in this inquiry

Note: For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this thesis.

The sample size was comprised of thirty one different interviewees in total. This number was arrived at by optimizing the feasibility and reliability concerns. All together, the infield data collection lasted for sixty-two days. The range of interviews allowed this researcher to achieve sufficient reliability in the statements recorded within particular stakeholder groups (provincial, municipal, indigenous peoples, local inhabitants who drank directly from the Taguibo River) to test the homogeneity within groups.

Caraga is located in the northeast section of the island of Mindanao and is endowed with fertile lands, numerous eco-tourism spots and abundant resources. It has four provinces, three cities, seventy one municipalities and 1,306 barangays with a land area covering approximately 1,884,697 hectares, representing 6.3 percent of the country's total land area and 18.5% of

Mindanao's. Region XIII is the timber capital of the country, per DENR Administrative Order No. 99-13, and it also supports many watersheds such as the Taguibo Watershed, which provide clean drinking water for urban areas.

The total population of the region per census in year 2000 was 2,095,367. Based on data available, the population growth rate was 1.63 percent annually between 1995 and 2000, which is low compared to the country's annual average growth rate for 1995-2000 of 2.36 percent (NEDA, 2004-2010 report pg:3). In the 1995 and 2000 census, Caraga was the 2nd least populous region in the country.

Table 1 Population of the Philippines and Caraga, CYs 1995 and 2000

Population	Land area (sq. Km)	1995	2000	Annual Average Growth Rate	Population Density (2000)
Philippines	300,000.00	68,616,536	76,504,077	2.36	255
Bislig City	405.0	103,668	97,860	(0.99)	242
Butuan City	816.62	247,074	267,279	1.58	327
Surigao City	245.3	104,909	118,534	2.46	483
Agusan del Norte	3637.6	267,411	285,570	1.32	79
Agusan del Sur	8965.5	514,736	559,294	1.67	62
Surigao del Norte	2739.0	442,203	481,416	1.47	176
Surigao del Sur	4552.2	471,263	501,808	1.91	110
Caraga	**20,710.9**	**1,942,687**	**2,095,367**	**1.63**	**101**

Source: National Statistics Office

From 2001 to 2003 Caraga region ranked fifth out of six regions in Mindanao in terms of the Gross Regional Domestic Product (NEDA, 2004 report pg 4). During the 2001-2003 time span, Caraga had a 0.9 percent economic growth rate compared to the 9.5 percent growth rate of neighboring Region 12. In terms of per capita income, Caraga has the second lowest per capita income among Mindanao regions and nationwide (NEDA, 2004 pg 4).

Table 2 Ranking of Regions in Per Capita Gross Regional Domestic Product, Mindanao Regions, CYs 2002-2003

Region/ Year	2002		2003	
	PC GRDP	Rank	PC GRDP	Rank
IX	9,147	4	9,331	4
X	13,375	1	13,782	1
XI	12,080	2	12,286	2
XII	10,963	3	11,110	3
ARMM	4,455	6	4,493	6
XIII (Caraga)	4,900	5	4,823	5

Source: National Statistics Coordination Board (NSCB), 2004;
Legend: PC GRDP- Per Capita Gross Domestic Product

Poverty incidence in the region decreased by 1.7 percent from 44.7 percent in 1997 to 42.9 percent in 2000 (NSCB, 2004). Another positive development is the increase in the regional annual family income based on the 1997 and 2000 *Family Income and Expenditure Survey*, which increased by 13.65 percent from Philippine Pesos (PhP) 717,126.00 in 1997 to PhP 81,519.00 in 2000. Regional annual family expenditure also posted a 16.65 percent increase, from PhP 61,815.00 in 1997 to PhP 72,108.00 in 2000 (NSCB, 2004). Some suggest that the establishment of new local infrastructure, particularly buildings such as the Gaisano Mall in Butuan City "would not be standing without the presence of mining operations in the area" (personal interview 07-16-11A, 2010). Buildings such as the Gaisano Mall help to boost the local economy by generating employment, increasing income and stimulating economic activity (NEDA, 2004). Contrary to the employment generation associated with new infrastructure (i.e. the Gaisano Mall), the poor performance of the region's economy still had a considerable dent on the labor and employment situation in the region; meaning that there is serious unemployment in the region.

Caraga's labor and employment situation considerably declined between 2001 and 2003. The unemployment rate from 2003 stood at 13.3 percent, a 1.5 percent and 3.8 percent increase from 2002 and 2001 respectively (Philippines Yearbook-PSY, 2003). According to the Region XIII: Caraga Development Plan 2004-2010, the deterioration in the employment figures came with the increase in the labor force of the region which increased 10.9 percent from 2002 to 2003. It is also interesting to note that while the agriculture, forestry and fishery sectors still employ more than half of the region's labor force (53 percent in 1997 and 52 percent in 2002), the Service sector's share of the labor force has been increasing from 36 percent in 1997 to 39 percent in 2002 (PSY, 2004).

From a national perspective, Caraga Region is one of the most impoverished regions in the country (NEDA, 2004). The region has the fourth highest family poverty incidence among all the regions in the country for years 1997 and 2000, while among Mindanao regions, Caraga has the third highest poverty incidence (NSCP, 2004). Recent poverty reduction programs shifted from the dole-out method and espoused people empowerment (NEDA, 2004). Such projects include the Community Based Forest Management (CBFM) Programs and the Integrated Forest Management Agreements (IFMAs), "allowing claimants of the forested land to secure twenty-five years of tenure to ensure that socio-economic conditions of those farmers will be uplifted. So that is our (DENR RO. No. XIII) ultimate goal" (personal interview 08-05-5A, 2010).

Data Collection

The path chosen in this inquiry was driven by the need to use methods which would most effectively provide answers to the research questions. Key imperatives were the need to try to assess the attitudes of underrepresented minorities in the Caraga Region by exploring the

sampled stakeholders' perspectives related to the natural resource-based conflict associated with the alleged small-scale mining operations inside the TRWFR.

In-depth interviews are effective in exploring new issues and are often used in conjunction with other qualitative modalities (Biber and Levey, 2006). This method is compatible with the emergent research design of this case study given the time constraints imposed and the eighteen different heterogeneous stakeholder groups.

While in-depth interviews provide opportunities for exploring new ideas, participant observations allowed for understanding the issues in context (Patton, 2002). Various participant observations allowed for both verbal and nonverbal observations to be obtained to further explore the four research questions. For example, I attended Sunday mass at Vineyard, a local church in Butuan City with indigenous leaders and visited them in their communities. This allowed me to catch both the non-verbal and verbal interactions that describe the livelihoods and quality of water in the TRWFR. In addition, these observation exercises helped me to develop more sophisticated questions to gain more examples of insider perspectives towards the social and environmental impacts associated with the alleged illegal mining operations. For each of the data collections, detailed expanded notes and/or verbatim transcripts were produced. This textural data provided the input for data analysis.

Data Analysis

Glaser and Strauss (1967) and Lincoln and Guba (1985) describe one of the most common analytical induction technique. This techniques assumes that:

1. Incidents are assigned to categories by comparing them to other units already assigned. If some units don't fit any preexisting category, the researcher may have to create new classifications.
2. While refining categories, the researcher must write rules or propositions that describe the underlying meaning that defines the category. These rules help to refine the categorization and help to "explore the theoretical dimensions of the emerging categorization system."
3. The researcher searches for relationships and patterns across categories, and examines propositional statements looking for connections.
4. Finally, the researcher simplifies and integrates data into a coherent theoretical structure. (Wimmer & Dominick, 2003, 112-3)

Expanded notes and verbatim text generated from the thirty nine total data collection activities provided the starting point for continuous data analysis throughout the research process. The analysis followed on the tradition of Carney's Ladder of Analytical Abstraction (1990). At the end of each data collection activity, a preliminary analysis of text was conducted. This served the dual process of informing subsequent data gathering, as well as identifying emerging concepts and themes related to the research questions.

At the end of the observations, preliminary codes, related to the concepts and themes were developed. These codes sought to extract data related to the research questions. For example, "Graft" was used to represent interviewees' speculations of the gain in capital assets through dishonest, unfair or illegal means, especially through the abuse of one's political positions. Table 3 gives an example of how codes were developed.

Table 3 Sample of Codes

Code (symbol)	**Definition**	**Rule**
Graft (CP-G)	Applies to the gain of money or advantage by dishonest, unfair or illegal means, especially through the abuse of one's political position	Applied when an respondent refers to an observation regarding a dishonest event that took place between two or more separate parties for the sole purpose of elite capture of natural resources and/or wealth

These codes were shared with colleagues, in order to verify their appropriateness and subsequently revised in order to more directly relate to the research questions. Appendix II shows the codes which were used in the data analysis. I then applied the codes to the text of each unit of textual data collected. Each unit of coded data was then summarized in terms of its relation to the research questions. These summary statements were then used to make a conceptual matrix for each research question. The matrices summarized stakeholders' perspectives on the environmental and social impacts incurred by the illegal mining operations and their effect on livelihood options, water quality of the Taguibo River, distrust in those responsible for monitoring the natural ecosystems, and suggestions for improving the management of a protected watershed forest reserve.

The matrices facilitated easier visualization of the stakeholders' perspectives regarding the institutional challenges, weak government and growing awareness of the lack of the mining companies aligning with local community's livelihood priorities and national drinking water standards. They accentuated the relationships which were important to the research questions, provided empirical evidence, and served as the basis for explaining this natural resource-based

conflict through the lens of different heterogeneous groups in the Caraga Region. Section Two provides a comprehensive outline of the results of the analysis.

Results

Mining and Sustainability Challenges in Region XIII Caraga

Macro-overview

Despite the vast natural resources found within Region XIII, the economic performance observed within the Caraga Region has not promoted anchored broad-based socio-economic development (personal interview 07-06-4A, 2010). Infield interviews with the eighteen different stakeholder groups failed to uncover any personal observations of benefits associated with the illegal small-scale manganese mining in the watershed. Often times the lack of support for the illegal mining was associated with the fact that benefits were unfairly distributed and the negative environmental consequences were mainly impacting the marginalized upland farmers and low land Butuan City residents. A few stakeholder groups spoke about the potential benefits of small-scale mining operations, and stressed the importance of the operations being 'legal'. Furthermore, the interviewees stressed that legal operations allow for local government units (LGUs) those who have political jurisdictions where the small scale mining permits (SSMP) are granted to collect taxes, potentially leading to anchored socio-economic development. Traditionally mineral revenues from legal operations accumulate at the LGU level. Unfortunately, with illegal mining operations, the economic benefits go directly to the mining companies and the negative externalities are experienced by the marginalized farmers in the mountains.

Representatives from the BCWD point out, per records supplied by the DENR-MGB R.O. XIII that "this region (Region XIII) is home to the largest deposits of gold, nickel, chromate,

manganese and silver" in the Philippines (personal interview 06-26-2A, 2010). The 'Black Mountain' found within the TRWFR, also nested in the Hilong-Hilong Mountain Range, located in Northeastern Mindanao, is observed and recorded to house some of the country's highest quality and quantity of Mn ore (personal interview 06-26-2A, 2010). The rich manganese endowments make the Caraga Region, particularly the Taguibo watershed, a highly sought after location for tenure rights (personal interview 6-26-2A, 2010).

According to some stakeholder groups interviewed, the Caraga Region is responsible for producing "55% of the gross domestic production (GDP) for the whole Philippines". Surprisingly, one interviewee stated that the region is only receiving 15% of the GDP back" (IP 8-4-1A, 2010). Even though the Caraga Region is currently the Mining Capital of the Philippines (personal interview 7-27-12A, 2010); "The past three years, mining companies are in the business of cutting into Caraga" (personal interview 7-20-13A, 2010); "mainly Chinese companies are coming into the area to invest. As you may know, Chinese for the most part are not the best people to talk to about mitigating environmental impacts or talking about sustainable practices" (Personal interview 8-13-16AA, 2010).

From the perspective of the upland farmers, it is clear how dependent those communities are on the forest products to sustain their livelihoods. Thus, any sort of disruption in the productivity of the upland forests will have a lagged negative impact on the upland farmers. This is attributed to the fact that the mining in the Taguibo watershed was also accompanied by other destructive 'clearing' activities in the uplands resulting in frequent landslides and turbid water. This caused serious impacts on the upland farmers in the form of landslides and loss of crop land to newly constructed access roads. This region houses some of the country's last standing virgin forests

(personal interview: 7-26-1AAAA; 8-4-1A; 7-6-4A; 7-8-6AA, 2010), so deforestation also results in the loss of biological diversity.

It is recognized by the DENR-MGB Region XIII, that the Caraga region currently has the highest number of mining operations ever recorded; “we have 23 mining rights in the Caraga Region right now” (personal interview 7-27-12A, 2010). “Previously, the mining capital was in Northern Luzon, and now it is here in Caraga” (personal interview 7-20-13A, 2010). Commonly, stakeholder groups felt as though their local assets were underutilized by locals and the benefits were sent far away for others’ benefit, while local people suffered. A local IP and former construction company owner described this in a personal interview: “when it comes to mining, they are bringing the land to Japan, they just give it away to China. They are giving my land away, they are shipping it out! The land is not just staying here and being developed they are getting the land” (personal interview 08-04-1A, 2010). Not only is the raw material being shipped away; no additional value accrues locally. Raw material is shipped elsewhere to be refined and processed.

Another interviewee expressed pure frustration with the impacts associated with the illegal mining going on in the area: “We have suffered enough already and we don’t want to suffer anymore”. This Butuan Resident and DOT employee is referring specifically to the lowland water shortages as an end result of the various activities occurring in the uplands (personal interview 07-16-11A, 2010).

The largest English-language web presence in the Philippines called the ‘*Philippine Daily Inquirer’*, validated comments heard in the field (Higgins, 2002). This source reported that Caraga is the new mining capital. Mining tenement maps issued in February of 2009 also

identified the Caraga region as the emerging mining capital in Asia. Many of the stakeholder groups interviewed failed to make a positive connection between increasing mineral tenements and rising economic and/or social well-being in the region. When local government officials were interviewed, one lawyer in the Department of Interior and Local Government (DILG) claimed that the natural resource management here in the region is very complicated. He said "above the soil there are trees and below aside from the minerals we have our water sources so it's complicated" (personal interview 7-5-14A, 2010). Moreover, he insinuated that the complication stems from disparities in land tenure. He continued, "Back where you come from, you don't have people living where they mine minerals, but here there are lots of people living in the mountains and we can't just kick them out of their lands" (personal interview 07-05-14A, 2010). Furthermore, Republic Act No. 8371, also known as the Indigenous Peoples Right Act (IPRA), clearly stipulates in section 7 of paragraph c that indigenous peoples (IPs), which are commonly understood to be the dominant ethnic population in the Hilong-Hilong Mountain Range, have the right to stay in their territories and not be removed. It is further described in section 7, paragraph d, that if displacement occurs as the result only of natural catastrophes, the State shall endeavor to resettle the displaced IPs (IPRA, 1997).

Contrary to the generally negative perspectives of interviewees regarding the local mining operations in the area, the Regional Director of the Department of Trade and Industry, Mr. Brielgo O. Pagaran, points out that "the mining operations in the Caraga region have improved the living conditions of the people in the countryside as many villagers, mostly IPs, find work while tax revenues for the local governments also increase" (Crismundo, 2010). The glaring implications of these 'development projects' however, result in conflicts around the access to, control and use of the natural resources in the uplands and lowlands area throughout the Caraga

Region. Escalating community resistance against such development projects is not an isolated story. As Mr. Pagaran says, one could consider this region "the center of resources conflict in the Philippines" (Crismundo, 2010).

As pointed out by the National Census Office, fifty three-percent (53%), of the region's population is considered to be earning less than what is needed for daily survival (Reyes, 2010). This emerging Asian mining capital hosts two of the poorest provinces in the country and a majority of these mining permits are within the ancestral domains of the Manobo-Mamanwa tribes but only five (5) Certificates of Ancestral Domain Claims/Titles were issued (Carrales, 2009).

Mining, Water and Livelihoods

Mining has potential adverse effects on livelihoods primarily through its impacts on land and water resources. In the Caraga Region, land rights were initially held by the IPs in the area. "Actually the truth is the entire Caraga Region is claimed as ancestral domain" (personal interview 07-16-11A). As described in the Indigenous Peoples Rights Act of 1997 (IPRA) the IPs of the area have the right to utilize those resources nested within their ancestral domains, except those reserves intended for common and public welfare and service (IPRA Sect. 7 paragraph g, 1997). This means, because the Taguibo Watershed is a proclaimed watershed with the main purpose "to serve as the primary source of irrigation and potable water for the residents of Butuan City as well as the source of forest and non-forest based livelihood of the communities living in the watershed" (personal interview 06-26-2A, 2010), the IPs in the area have to adhere to prior mandates under Presidential Proclamation No. 1076 (1997).

On November 6th 2006, a joint manifesto petition from San Antonio Tribal Council, San Antonio, RTR, Agusan del Norte and Anticala Tribal Council, Butuan City was addressed to "Her Excellency Gloria Macapagal Arroyo" requesting President Arroyo of the Republic of the Philippines, to help the concerned tribal groups who are requesting alternative livelihood opportunities to alleviate present economic problems they are facing in the TRWFR (Joint Manifesto, 2006).

The IPs are asking to be granted a rightful possession of the manganese ore previously extracted and stockpiled within the TRWFR with an estimated weight of 15,000 tons. This is the same stockpile of Mn ore that has been already granted to the provincial government of Agusan del Norte. In addition, the IPs are also seeking control over the Mn ore still in the earth's crust, suggesting that IPs from the "Black Mountain" area are the legal owners of those minerals. The local IPs claim to have legal rights to the Mn ore because it falls under the IPs ancestral domain claims. It is important to point out that these same stockpiles of Mn ore being claimed by the IPs are also being claimed by Mr. Zerda and McBern Mining Corporation (personal observation, 07-27-12A, 2010). Ironically, it is common knowledge that large portions of the previously extracted Mn ore has already been stolen according to DENR-MGB, DENR-EMB and PENRO Officials interviewed. It was unclear who was responsible for stealing the Mn ore from within the Taguibo watershed, or even who the mineral ores rightfully belong to. However, the debate over who should be rightful owners of the Mn ore continues today. According to some the previous mayor of Butuan City, Mr. Plaza II, was both directly and indirectly responsible for allowing illegal operations to occur inside the watershed.

Another request coming from the IPs is that three hundred hectares of land be excluded from the Taguibo Watershed for the purpose of legal small-scale mining livelihood diversification opportunities. As many interviews suggested, the small-scale mining tends to lead to ineffective mining because of the lack of proper environmental mitigation practices and technologies implemented in small-scale projects. As the DENR-MGB official describes "with small-scale mining they do not have enough funds to have proper mitigation measures in place. Small-scale mining groups are instead interested in extracting the raw materials at the lowest cost possible and are not interested in protecting the environment" (personal interview, 07-27-12A, 2010).

A final request from the IPs was to disapprove, disallow and cancel the MPSA application of United Philippines and China Mining Corp. (UPCMC) also referred as the AAM-Philippines Natural Resources and Development Corp. It appeared to be common knowledge that the UPCMC and the AAM-Philippines are the same company because they have the same office address at Suite 601 A S & L Building, 1500 Roxas Boulevard, Ermite, Manila. More recently, the UPCMC and the AAM-Philippines were later referred to as the United Lumad Mining Corporation (ULMC). It was pointed out during infield interviews with various provincial and regional officials in the Caraga Region, that the ULMC [6] was responsible for the illegal extraction of Mn ore as well as road construction/rehabilitation and illegal timber harvest in the area. Almost every stakeholder group, with the exception of the CENRO and Taguibo Community members, informed the researcher in personal conversation that numerous civil cases have been filed against ULMC President Mr. Roger Patanao for being responsible for the mining and road construction in the watershed area. As the local IPs continue to bear the cost of

[6] UPCMC also known as AAM-Phil, was even further converted into what is now referred to as the ULMC which is run by Mr. Roger Patanao as President.

the various illegal operations it did not take long before the upland farmers and IPs voiced their concerns regarding the negative environmental impacts the illegal mining is having on their local natural resources. Hence, one of the tribal leaders (a datu) stepped up and acted as a prime witness in a court hearing against Roger Patanao to convict him and his workers for the destruction of the watershed area (personal interview, 07-08-1AA, 2010).

Weak Local Government Units

Unfortunately, existing institutional arrangements favor promotion of mining over its regulation or its synergy with economic development. The idea of the manipulative use of power in the form of funds or political clout was described by all but two stakeholder groups. This elite capture of goods through inappropriate use of power was referred to in the coding process as graft [7]. Graft was described as often resulting in conflicts and/or tension over water and other natural resources. This tension tends to hound communities in this region.

A former Parish Priest of Ampayon described this dishonest behavior of the LGU in Butuan City in relation to the TRWFR case: "In implementing the laws of the land, the local government officials would be the ones to impose and implement the law but they are the ones violating the laws" (Personal interview 08-10-18A, 2010).

This comment followed the opening question which asked the interviewee to describe his perception of the illegal mining, road construction and timber harvest that occurred in the Taguibo watershed from approximately late 2003 to early 2010. He stated that part of being a parish priest in the diocese is carrying-out capacity building exercises as a way to help fellow Christians sustain their livelihood needs. The interviewee described various negative

[7] Applies to the gain of money of advantage by dishonest, unfair or illegal means, especially through the abuse of one's political position

environmental impacts associated with the mining projects such as frequent landslides and noticeable changes in climate. The negative impact of the mining operation on local ecosystem services was the key reason why the diocese reached out to the local farmers in the Ampayon area.

The interviewee described that when he was assigned as the priest in the area he tried to educate and give some sort of forum for those farmers and others who are living among destructive mining operations. The purpose of this was to act as a way to allow the members a place to share concerns and potentially fill knowledge gaps related to dynamic nature between humans and the environment. He went on to say that only a few participants were interested in listening to the information mainly because they were comfortable with current mining practices. The interviewee believed this to be somewhat normal seeing that the local barangay officials are being pressured by the Butuan City administration to proceed with current development mechanisms-- timber harvest, small-scale mining and high chemical input farming. A transcript of from the forum summarizes some of the main comments of local farmers from the Ampayon area:

"Some (local Ampayan farmers) would say that there are some local officials involved in the illegal activities (illegal mining & timber harvest etc.). Sometimes, they (LGU in Butuan under Plaza II family) use policemen to protect them, acting as their escort. Most people would not give any comment because they know that it is people of a particular local government unit who are involved. They (local farmers) would not make any comment regarding what was seen especially if those activities are clearly coming from local government and local officials."

(Personal interview 08-10-18A, 2010)

This quote points out that most people understand that the LGU in Butuan City, under the previous administration led by the Plaza family is responsible in part for the illegal activities.

Thus not only is graft an issue but so is fear of political retaliation. Fear was a common feeling expressed among all but two stakeholder groups (the CENRO and the Regional DENR offices). Fear becomes an issue for government workers, especially, for those individuals or groups of individuals who do not align with the Plaza II family's actions and values. Through my personal interviews with the CENRO forester, I learned that he was personally elected by previous mayor Plaza to run the office. In a subsequent interview with the NEDA office I inquired about the CENRO of Butuan City's, involvement with the illegal mining operations in the watershed. Electronic photographs were presented during the NEDA interview which represented Mayor Plaza's son and various LGU officials from Butuan City blocking various multi-sectored (provincial, national, and municipal) investigation teams from analyzing the environmental impacts of the illegal mining operations in the watershed area.

Various land tenure systems were approved in the Caraga region through the Regional DENR after the region was already proclaimed a watershed. This marks one of the many discrepancies in the natural resources tenure systems found within the TRWFR. The overlapping Community Based Forest Management Agreements (CBFMAs) and Caraga Ancestral Domain Claims (CADCs) were approved well after the P.D. No. 1076 [8] was enacted in 1997. The Manobo-Mamanwa Tribal Communities Development Cooperative certificate No. 70022 was issued in 2003 covering 2,562 hectares of land; the Kablay Tree Planters Association Inc. (KPTAI) certificate number 70009 was issued in 1999 covering 1,282 hectares of land; and the Anticala Tribal Sellers Association (ATRISA) Certificate number 70007 was also issued in 1999 including 1,000 hectares of land (DENR website, 2010). Therefore, the Manobo-Mamanwa Tribes which are seeking primary jurisdiction and control over the land and the subsequent

[8] Presidential proclamation proclaiming the Taguibo River a protected watershed forest reserve

resources do not legally have that right because their certificates were granted after the Presidential Proclamation. This ruling is outlined in the Republic Act No. 8371 also known as the Indigenous Peoples Rights Act of 1997 (IPRA, 1997). Section 56 describes they must follow existing tenure laws.

Table 4 Tenure Systems within the Biophysical boundaries of the Taguibo Watershed

Land Tenure	**Issue Year**
IPRA No. 8371	1997
P.D. No. 1076	1997
TCDC No. 70022	2003
KPTAI No. 7009	1999
KPTAI No. 7007	1999

As a result of the Taguibo watershed being proclaimed a protected area in 1997, the administrative jurisdiction, supervision and control of the forest reservation is given to the Department of Environment and Natural Resources in coordination with Butuan City Water District (BCWD) and other government agencies with the objective of maintaining the area's usefulness as a source of water for domestic use, irrigation and other forestry purposes. It is important to point out that this gives DENR and BCWD the lead control over the watershed and its nested resources (i.e. water and forestry products). The BCWD is a government owned and controlled corporation responsible for providing clean and safe potable water to over 300,000 residents in the greater Butuan area.

To date (June 2011), the conflict between the BCWD and the IPs continues as to whether IPs should be entitled to a share of BCWD's gross profit from water rights. The conflict is not

resolved and debates continue between the two stakeholder groups. The IPs from the watershed area think the BCWD should provide the IPs with economic or social development compensation for the river water taken from within the CADC [9] (No. 178). As previously stated, the BCWD is a national agency and must go through extensive bureaucratic processes to change any aspect of their budget, which provides the BCWD with a reason/excuse as to why they cannot easily provide compensation to the IPs for the water extraction.

Mining activities have fundamentally altered the spatial extent of livelihood resource bases, leading to unsustainable intensification and increasing livelihood insecurity. Personal interviews from 2010 show that upland farmers, a majority of which are IP's, struggle to maintain productive farm lands. This is because of landslides and new land-use rules imposed on those residing within the TRWFR. As described throughout the field research the main source of livelihood for the IPs in the San Antonio area is comprised of subsistence farming of maize, as well as upland rice, vegetables and banana production (personal interview 07-30-8A; 07-30-1AA; 08-04-1A, 2010). "The erosion has destroyed our farming; our farms have been rushed out through landslides" (personal interview 07-30-1AA, 2010). "I think one of the marked effects of that activity (illegal mining and associated activities in the TRWFR) is when we plant banana trees they turn dry quickly and they just die. I only think, I do not know for sure, but maybe because of the use of chemicals in the mining process is causing the bananas to just die" (personal interview 07-30-8A, 2010).

Another side effect perceived to be associated with the said illegal activities in the watershed is the decreasing crop yields observed by the upland farmers. Some IPs associate the decreasing

[9] Caraga Ancestral Domain Claim

crop yields with the fact that they are no longer allowed to till their farms or use chemical inputs within the watershed area. One interviewee said, “we really observed diminish in our crop product” (personal interview 07-30-1AAA). After the enactment of the P.D. No. 1076, chemical fertilizers and pesticides are no longer permitted for use inside the watershed boundaries. This presidential decree also bans the traditional way of farming: slash and burn techniques. It appears that social relations were also impacted by the activities and associated mandates described above. “The first time I learned our ancestral domain is part of the watershed area in 2004, I realized that we have lost the rights to our ancestral domain. We feel like we lost the rights over the land because it is part of the watershed which is a protected area” (personal interview 07-30-1AA, 2010).

Various IP’s from the San Antonio area and “Datu Pantagan” Gregorio Antong, who were interviewed at their regular meeting center (similar to a town hall which was in sight of the mining area in mount Hilong-Hilong), directly correlated increasing average temperatures in the mountain area to deforestation accompanying the illegal Mn mining operations (personal interviews 07-30-8A; 07-30-1AA; 08-04-1A, 2010). Many further explained that the main source of their livelihoods is vegetable farming. Not only do upland farmers depend on selling surplus agriculture produce to the lowlanders as an additional source of income, the lowlanders, particularly Butuan Residents, depend on those vegetables for their subsistence needs.

The systematic nature of biophysical watersheds means that all social, environmental and even economic elements impact each other. Not only are upland activities impacting lowland livelihoods; changing mean temperatures in the mountains will potentially jeopardize the overall sustainability of this Region by deteriorating the comparative advantage of upland mountain vegetable farming plots and the water regulator capabilities of the forest areas. As mean

temperatures in the mountains increase farmers are being forced to plant alternative (heat and drought tolerant) crops. As the former parish priest of Ampayon states:

> "A lot of farmers who plant vegetables try to divert their livelihoods. One time I asked one farmer why before he was planting vegetables now he is planting flowers? He responded because flowers can be transported very easily compared to vegetables and flowers can be put in a basket and brought to city without any more expense than vegetables. And another consequence if we continue to plant vegetables considering the area is polluted and changed; we now need more chemicals and fertilizers which is very expensive and our government is not really serious in supporting us (the local farmers) in regards to subsidizing the expenses in planning vegetables or other forms of agricultural products."
>
> (Personal interview 08-10-18A)

Various IPs described crop yeild reductions observed post illegal mining operations. This is perceived to have a detrimental direct effect on the livelihoods of farmers, adding to the current poverty level and worsening hunger among the IP communities. Because the Butuan City residents are very much dependent on the agricultural products from the upland IPs, they too will feel the repercussions of diminishing agricultural yields as fewer and fewer vegetables make it to the market.

As pointed out by many interviewees, poverty in the upland areas is a serious problem. The RDENR officer replied when asked about their general perception regarding the illegal mining activities "the real issue is maybe poverty. Like why do people do illegal and negative activities, well because they do not have economic opportunities, so we cannot blame them" (personal interview 08-05-5A, 2010). There is no question that, the IPs in the watershed area, are being hired by the illegal mining companies, specifically the ULMC owned by Roger Patanao, to work as miners. One of the many IPs from the area interviewed explained that there is a lack of fair compensation being provided to the IPs, from the BCWD in the form of economic compensation (i.e. money, hospitalization, education for children) for use of the Taguibo River (personal interview 08-04-1A, 2010). The same IP pointed out that because of IPs lack of access to

livelihood opportunities, "they resort to other forms of income be it illegal or legal mining or logging" (personal interview 08-04-1A). As one Datu points out, "the forest is the source for what we call the market, we get food, wood it is our source of livelihood" (personal interview 07-26-1AAAA, 2010). So as expected, when the IPs populations grow [10], added stresses are being placed on the forests' ability to regenerate at an appropriate rate to supply needed food and fiber materials.

Taguibo River Concerns

All stakeholder groups interviewed expressed a genuine desire for an integrated watershed management approach to maintain the Taguibo River. During the rainy season, Butuan City residents are without water, which is counterintuitive. As a local government representative commented, "heavy rains means no water, and when it doesn't rain we have water, strange" (personal interview 07-01-3A, 2010). Many interviewees explained the water shortage issue in the Butuan City area to be a result of turbidity which is caused from the erosion of upland soils that during heavy rains get washed down the mountain. The roads used for transporting the mined Mn ore act as a conveyor for the siltation to end up in the Taguibo River and neighboring tributaries. As records from DENR RO. No. XIII state, the roads were constructed illegally, as it is against jurisdiction for construction or heavy equipment to be carried out in a protected watershed area (personal interview 06-26-2A, 2010). The principle road construction project managers as required by the IPRA law section 59 titled *Certification Precondition* to obtain FPIC before project operations begin (personal interview 06-26-2A, 2010); however, there is no written record of a Free and Prior Informed Consent (FPIC) signed by the responsible IPs in the watershed area.

[10] or as low- land residents from Butuan City migrate to the upland areas (personal interview 07-14-6AAA)

According to many interviewees, the main contributor of river turbidity is road construction (also referred to as rehabilitation). The newly constructed road systems lack proper drainage. These roads were supposedly funded by the Local Government under the previous Butuan City Mayor D. Plaza II's 'Farm to Market Road' project. The supposed purpose of the road extension project was to connect Butuan City with San Antonio, RTR for the purpose of allowing upland farmers to more easily access the markets in the lowland areas to distribute marketable goods. The road was actually used to transport the illegally extracted mineral ore and timber that was obtained from the mining areas and old working tunnels [11] located in the San Antonio, RTR area (personal interview, 07-20-13A, 2010). Additional photographs were shown during an initial interview with NEDA and BCWD officials who captured a shot of the IPs log book which is an ongoing record of any vehicle that passes through the IPs territory. This particular territory is within the watershed; the log book had recorded vehicles license plates and signatures of drives hauling Mn ore out of the watershed heading south towards Butuan City.

An interview with an FSUU staff member described the complex nature behind actions that must be taken when the turbidity in the river surpasses allowable limit five Nephelometric Turbidity Units (5NTUs):

> "The turbidity caused the more immediate and tangible problem. Every time there was moderately heavy rain, we really did not have water supply in the city (Butuan City) how horrible is that. No water in the city! That was the main problem, the reliability of water. If you have no water you can only imagine the problems that arise with that. Then you have to wait for the water to clear, BCWD before turning the Infiltration Gallery back on they must flush all 7 filters. So the thing is every time that happens the water pressure goes down and you have siltation in the pipes"
>
> (Personal interview 08-13-16AA)

[11] "Area 9 which has all the old American tunnels this is the most exposed area for manganese. Right at the bottom of the tunnel were stockpiles of Mn." (personal interview 07-27-12A, 2010)

Additional water quality concerns raised are as follows: Many community members demonstrated overall frustration in their interviews with the reliability and safety of the BCWD's potable water source. BCWD interviewees were among those who discussed the common complaints coming from concessionaries and put them into two categories, water security and safety issues. A Butuan City Water District lab technician stated:

"We did have complaints. A year ago so we did an information drive on illegal activities and safety in the Taguibo Watershed. I think the customers are also satisfied. So during that time the main concern is how safe is the water."

(Personal interview 07-26-2C, 2010)

Personal conversations with IPs in the San Antonio area point to a discrepancy particularly relating to the lack of water distribution and infrastructure found in the area. When asked where IPs and their families obtain their drinking water, it was commonly pointed out that residents fetch their water from local springs in the mountains near their agricultural lands. This information was contrary to what was stated during interviews with BCWD staff (personal interviews 07-30-1AAA; 07-30-1AA, 2010). Additionally, residents situated adjacent to the infiltration gallery, who had access to reliable infrastructure chose not to use the water provided by the infiltration gallery. One Taguibo resident stated: "until now we have never drank that water, because we are afraid of the consequences of drinking that water the BCWD provides. We are afraid of the microbes and the germs" (personal interview 07-29-15A, 2010). "Until now we don't drink the water we just buy water. We get our water from a different source we use the local deep wells" (personal interview 07-29-15A, 2010). Furthermore, this same community member explained in the interview some of the health impacts of contaminated water. The community member stated "my neighbors have been experiencing troubles, their children have upset stomachs from drinking the water provided by BCWD" (personal interview 07-29-15A,

2010). Other neighboring residents responded "my mother was hospitalized for diarrhea and most likely that is from dirty water" (personal interview 08-12-17AA, 2010).

Water quality downstream of the manganese ore mining sites often failed to meet Philippine National Water Standards. Exceeding the legal limits of .04mg/L of heavy metal (Mn) contamination forces BCWD to shut off the potable water pipelines to the Butuan City concessionaries for extended periods of time (personal interview 06-26-2A, 2010). Laboratory work done by and recorded at the BCWD office, demonstrates that between February 2009 to April 2009 manganese levels well exceeded the permissible limit (personal interview 06-26-2A, 2010). Lab records from the BCWD also recorded turbidity levels in 2004, 2006, 2008 and 2009 exceeded the legally allowable levels, surpassing 5 Nephelometric Turbidity Units (NTUs)[12] (personal interview 06-26-2A, 2010). Community respondents report increased incidences of human ill-health and elevated levels of water cloudiness. Concerns about impacts of mining on water underline the resistance to mining in the region. Interviews with all eighteen stakeholder groups showed that residents' primary concerns regarding the illegal mining were on the effect that mining would have on the quality and quantity of water. This can be tied to the fact that water shortage issues have become part of the norm (personal interview 07-16-11A, 2010). Everyone except the privileged, wealthy few, are forced to drink water from the contaminated and unreliable Taguibo watershed. During the second round of interviews at the BWCD it was made clear that the current task at hand for the laboratory officials was monitoring the water quality supplied to their concessionaries. One respondent from the BCWD stated:

[12] This water quality measurement is used in determining the turbidity, cloudiness, or haziness of a fluid caused by individual particles (suspended solids) that are generally invisible to the naked eye.

"So during that time (when illegal mining operations were taking place 2004-2010) the main concern (coming from concessionaries) is how safe is water and then the comment that there is no water during that time because we (BCWD) are forced to shut-off our water source because of turbid water. We (BCWD employees) are concerned if there are increases in Mn or any other heavy metal for that matter or foreign materials in our water, we will be forced to shut-down our infiltration gallery to check if it is safe to use the water. So that is why we shut-off our infiltration gallery to check if it is safe to use. We cannot compromise health of consumers. Better to not have water rather than to giving them unsafe water. It would be like killing them softly and we are the ones responsible, oh my gosh!"

(Personal interview 07-26-2C, 2010)

Not only is the water posing health concerns, it is also impacting local revenue generating activities in the city. As one DOT employee points out, the water quality creates challenges for the tourism industry. If foreigners travel to the area in hopes of a nice vacation, and are confronted with no water in hotels and overall unsanitary living conditions, the likelihood of them staying or returning in the future greatly declines. An excerpt from an in-depth interview with one DOT employee provides a summary of the general frustration felt among Butuan visitors and lifelong residents.

"We have received feedbacks from tourists specifically in Butuan City complaining about the water quality in the early part of last year (2009). Since we started to feel the effects of mining we see the destruction and the effects of it to our water supply. For instance, there were tourists complaining in one hotel of the water quality in his bathroom. He does not like to take a bath anymore because the water was dark. So that is one negative effect to the people here in Butuan City. Basically though on top of it all, we are drinking that same 'dark' water, we are using the same water for our baths. We hated it! During that time if you see the Face book there are a lot of negative comments about the watershed, like ' What are they doing?' 'What kind of water do we have?' Especially during the rainy season instead of enjoying a strong flow of water in our faucets we don't have any water. Which it's very ironic we are suppose to have a lot of water during the rainy season but there is none not even a drop of water then. So what's this at the expense of people, so there was an outraged during that time."

(Personal interview 07-16-11A)

Mining and Conflict

Once communities became aware of the effect the encroaching mining operations were having on tenure rights and livelihood assets[13], they realized that their abilities to cope with the environmental and economic changes were not clearly defined. With the current mining system in the Caraga Region, responsibilities are fragmented and so is authority related to the distribution and regulation of natural resource-based assets. This leads to non-harmonized efforts to manage the watershed and the nested resources. In conjunction with fragmented stakeholder groups, there also exist great disparities among the various mandates describing how power should be dispersed among the stakeholder groups regarding the monitoring, protecting, and sustainable development of the natural resources found within the TRWFR. Although the land is a proclaimed watershed forest reserve and is owned by the State as public property; parts of the watershed are claimed as an Ancestral Domain which makes it also privately owned.

The system described above has the characteristics of what interviewees described as 'lack of effective institutional arrangements'. Similar to 'lack of effective institutional arrangements', 'weak local government' was another broad theme which emerged during the inquiry process. As described by key informants in this inquiry process, 'political rivalry' and 'captured power' were used to describe insiders' perceptions of weak local governance in the region.

Lack of Effective Institutional Arrangements

Over the years in the development domain, there has been growing recognition of the role that institutions and governance structures play in shaping the prospects for economic growth and broad-based social welfare around the extractive industry (ICMM a, 2006). Among all

[13] Particularly the Philippines clean water sources and productive farm lands

stakeholder groups agreed that local government units should 'spearhead' activities related to protecting and sustainably developing the local natural resources for the benefit of all peoples, especially marginalized ones (i.e. women, children, indigenous peoples). However, just over half of the stakeholder groups (10), believed that the local indigenous peoples (IPs) in the Taguibo Watershed are more equipped than other groups to be able to effectively manage the watershed area and resources. Therefore, local IPs are viewed more effective environmental "watchdogs" than government officials. Unlike the local Butuan residents interviewed, a majority of the local IPs reside in the difficult to reach rural terrain in the watershed area and thus, are the most familiar with the remote areas. Furthermore, these IPs are believed to be the best equipped to monitor cases of illegal natural resource-based extraction/harvesting operations within the TRWFR.

"They (all Datu's) have all the rights to apprehend any illegal interests in the area because the tribal leaders are very well known, they really actually know the area very well. Even when the community people cannot enter the area because they don't have prior consent, the tribal leaders are already there. So if ever there are illegal operations in the area the tribal leaders really know because it is not easy to penetrate the area without the consent from the tribal leaders. So if ever we could find illegal activity in the area the tribal leaders know really who is the person conducting those illegal activities. So the DENR is supporting the tribal leaders as Forest Protection Officers."

(Personal conversation with two Community Development Assistant Officers from the PENRO, 07-14-6AAA, 2010)

Contrary to the popular belief that IPs who currently reside in the mountain area are best suited to manage the resources, the legal mandates suggest otherwise. Primary jurisdiction over the watershed is given to the BCWD and the RDENR. Unfortunately, current governing rules and legal mandates prevent such alternative natural resource management systems from putting IPs in charge of natural resource monitoring. Republic Act No. 7160, also referred to as the 'Local

Government code of 1991', clearly outlines the duties, general powers and new local autonomy given to the State level.

Section 2- *Declaration of Policy*-

> (a) It is hereby declared the policy of the State that the territorial and political subdivisions of the State shall enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals. Toward this end, the State shall provide for a more responsive and accountable local government structure instituted through a system of decentralization whereby local government units shall be given more powers, authority, responsibilities, and resources. The process of decentralization shall proceed from the national government to the local government units.

Personal conversations with a Regional Office of the Department of Environment and Natural Resources further explored the implications of this act by describing who was to be the lead agency when complaints were filed in the TRWFR regarding illegal mining and associated activities. The interviewed forest management specialist responded, "The actions are bottom up, all actions come from the CENRO, they have the knowledge of their area so they are the ones who will directly go into the areas" (personal interview 08-05-5A, 2010).

As the above quote points out, the LGUs, specifically the Community Environment and Natural Resources Offices (CENRO) are a devolved power. This allows for a more bottom-up approach to be employed, yet the DENR still holds the final say. Conversations with NEDA and other government agencies, suggested that "supposedly if you look at the whole scenario it should be the DENR as the Mother Agency because it is a proclaimed watershed" (personal interview 07-06-4A, 2010). Furthermore, the general understanding among those interviewed was summarized by a key informant from the DENR-MGB RO. No. XIII stating that:

"After the approval (of small-scale mining permits) it is the LGUs who will implement the laws but the oversight functions remain to the DENR. The implementation is a function of the LGUs because this function has been devolved to them meaning the implementation and regulation of these functions are all devolved to the LGUs but the DENR still has its oversight functions on this because they are the national agency. So that is why every now and then they call for assistance from us the national government."

(Personal interview 07-27-12A, 2010)

The Republic Act No. 7160 gave autonomy to local government units. As previously described in section one of this thesis however, if the government units on the receiving end of the power lack sufficient capacity at the local level to effectively, efficiently and responsively use their newly obtained political authority for the greater good of the entire community, then complex challenges may become the norm when dealing with natural resource-based issues. Unfortunately, this is common in the case of the Taguibo Watershed. A local Butuan resident who is also a FSUU staff member describes in an in-depth interview that local political institutions in Butuan City are not fulfilling their job requirements as outlined in various mandates such as the Local Government Code.

"We asked for the local government code because we wanted to be independent, we wanted to be our own king in our own kingdom. And now, when they (LGUs) are asked to do something, they don't want to be king they want someone else to do the job for them. That is the real reason we have the local government code because these local officials are asking for local autonomy and now they are given autonomy and now they don't do anything with those powers-very bad people!"

(Personal interview 08-17-16A, 2010)

"I was reading the laws, we don't lack laws. We just lack the political will to enforce those laws. Like the DENR they don't need a watershed management council to do their work, they can already go there and do everything that is being proposed in the Taguibo Watershed Management plan"

(Personal interview 08-17-16A, 2010)

An employee of the Department of Tourism Region XIII went on to further describe the lack of action-ability on the part of the LGUs because of their lack of political will. The DOT employee stated: "It's really a matter of political will if these laws can be strictly implemented. The local leadership is lax about the laws nothing is going to happen; or worse, if they (local governmental officials) are not aware or not even conscious of what the laws are- well that is the worst scenario. So many laws already we do not need to formulate some more new laws. The truth is everybody is already confused, so many laws; so many things to break" (personal interview 07-16-11A, 2010). "Really the problem boils down to the political will of the LGU's to impose or to not impose environmental laws which were vested in them though the decentralization process" (personal interview 07-16-11A, 2010).

Lack of clarity is a theme which was described during an interview with a newly elected Butuan City Government Official (personal interview 07-01-3A, 2010) where the interviewee described confusion to be a source of error on the part of political leaders to enforce the diverse range of laws. Confusion is created because of the lack of clarity in the description of the 'rules or institutions' in place in the Caraga region. An active faculty member at FSUU also described lack of clarity as the cause of low effectiveness to manage the watershed and other natural resources on the part of the LGU. The local faculty member responded as follows:

"It (the decentralization process) does not cause confusion. Like you are asked to take care of your watershed within your area, I think that is easy you go there and take care of that and if you need help you go to national agencies and tell them you don't have proper capacity. In fact they are the lead agencies, the LGUs."

(Personal interview 08-17-16A)

Clearly, there are mixed opinions on the reasons why local government units are not carrying out their described job responsibilities. There is, however, consensus among stakeholders that the lack of enforcement of existing environmental laws is at least partly caused by a lack of collaboration among concerned parties whose main mission is to successfully and sustainably manage local natural resources.

Weak Local Governance

The dynamic natural resource-based conflicts nested in the TRWFR stem from what most believe to be devolution of power from the national government down to the local government units (LGUs). It was described by many interviewees that the LGUs should be the lead agency when it comes to the protection, regulation and distribution of natural resources within their jurisdictions to "attain their fullest development as self-reliant communities" (LGC, 1991). All of the eighteen stakeholder groups pointed out the DENR is to act as the oversight agency when it comes to the protection, regulation and sustainable development of the natural resources in the protected forested areas, such as the TRWFR. Personal conversation with EMB staff clearly demonstrates the dynamic and overlapping characteristic of natural resource-based management in the Caraga region:

> "Once the forest is impacted the water will also be impacted because they are connected. At this moment it is the LGU and DENR who have responsibility to protect the forest area. And also there are some indigenous people who live in the watershed area so maybe it is the NCIP who also are involved. The NCIP help these indigenous people. Then I think there are local units like the Barangay of Anticala who have also taken part in helping preserve the forested area in the Taguibo River. For now I think each government works but separate; we do not have close coordination. Once we create this Watershed Management Plan, then we will bring together the responsible agencies political officers and IPs in the area."
>
> (Personal interview 08-12-13C, 2010)

However, one employee of the NEDA RO. No. XIII stated that the DENR is to be the "Mother Agency because the area is a proclaimed watershed" (personal interview 07-06-4A, 2010).

Specifically related to the regulation, management and use of water and metallic mineral ores there is an additional overlap in jurisdiction which resulted in the tendency of one stakeholder group (BCWD) to blame another group for failure to do their jobs. The BCWD engineer had filed a civil complaint against four other government officials[14] for "grave misconduct, negligence and unjustifiable refusal to perform official duties" (personal interview 06-26-2A, 2010). This fragmentation of authority can be seen within the management of potable water distribution in the Caraga region, mainly Butuan City. For the purpose of this report, fragmentation of authority describes a distribution or regulation role over natural resources (i.e. land, water and minerals) that calls on multiple concerned government agencies to collaborate in a integrated approach, as outlined by the laws governing such resources in order to achieve some form of common ground acceptable to all stakeholder groups.

The Butuan City Water District (BCWD), which is responsible for supplying over 300,000 residents with a clean and safe water source is also a government-owned and controlled corporation (GOCC) (personal interview 06-26-2A, 2010); meaning that it also has legal mandates to follow (personal interview 07-26-2C, 2010). The source of water for the BCWD is the Taguibo River [15]. The delineation of the Taguibo watershed was prepared by the Department of Environment and Natural Resources (DENR) and it is under the administrative

[14] PENRO officer, Rosendo A. Asunto; Regional Executive Director DENR Region 13, Edilberto S. Buiser; CENR officer for Butuan City, Achilles C. Ebron; CENR officer for Cabadbaran, Raul A. Rosales

[15] Which was proclaimed as the Taguibo River Watershed Forest Reserve (TRWFR) under Presidential Proclamation No. 1076

jurisdiction of the DENR. Supervision and control of the reservation is also in coordination with BCWD as primary stakeholder.

Other government agencies are active in achieving the same objective of maintaining the Taguibo Watershed use as a source of water for domestic use, irrigation and other forestry purposes (personal interview 06-26-2A, 2010). During an interview with the BCWD, a respondent pointed out R.A. No. 8371 [16], Section 7 paragraph g- *Right to Claim Parts of Reservations*. It states, that recognized IPs have "The right to claim parts of the ancestral domains (land and nested resources) which have been reserved for various purposes (land uses), except those reserved and intended for common and public welfare and service" (IPRA, 1997). This demonstrates that the IPs do not have legal jurisdiction over land that is being used to serve the common welfare of other community members. They therefore do not have legal backing to demand any percentage of the compensation from BCWD's gross income. Furthermore, the fact that the Taguibo River Forest Reserve was proclaimed a protected watershed just months before the IPRA law was enacted and years before the CADC No. 178 was issued and resulted in a discrepancy in the primary tenure system to be followed. This provided the BCWD with a legal advantage. The BCWD being a government owned and operated business and being the ones who were first given right to use and protect the watershed, also means that they do not have to provide the IPs with compensation for the utilization of some of the water from the Taguibo River.

Recap, CADC No. 178; CBFM Areas Certificate numbers 70022, 70007, 70009 and the P.P. No. 1076 were issued in 2004, 2003, 1999, 1999 and 1997; respectively. Thus, as outlined in the

[16] also known as Indigenous Peoples Right Act (IPRA) of 1997

concerned laws described above regarding watershed management, the DENR has primary control. This was then given to the BCWD which is the main stakeholder, followed by the EMB's pollution control division, Regional City Health Office and the other concerned Local Government Units (personal interview 08-12-13C, 2010). The overlapping mandates governing the above listed agencies means that water management calls for close collaborations to happen among those agencies in order to meet the needs of all Taguibo Watershed users. As described by many interviewees, "BCWD concessionaries encountered a lot of problems because there is no coordination between the government agencies" (personal interview 08-10-18A, 2010).

Contrary to rulings in R.A. No. 8371, a conversation with the Regional DENR employee revealed additional overlap regarding watershed management and primary jurisdiction. In personal conversation, Republic Act No. 7116 was described which further points to the LGUs as the said unit to take the lead role in managing the Taguibo watershed. An RDENR official stated that:

"So for example, in the (Taguibo) watershed as to the LGUs it is outlined in the RA 7116 the decentralization of devolution of functions from the DENR to the LGUs. The LGUs have specific functions over the watershed of 5,000 hectares and below. That is what we call a community watershed. If they intend to manage that, the DENR will make a resolution over that 5,000 hectares or below watershed that they will use it for their domestic water so the DENR, specifically the Secretary will issue an Executive Order declaring that certain watershed has been given the management to the LGUs. Although the management was given to the LGU but the DENR and LGU will still have close collaboration. Still the DENR has the jurisdiction over the management of all the forest lands."

(Personal interview 08-05-5A, 2010)

Many others attributed the lack of enforcement to the fact that most government agencies lack proper capacity to carry out newly obtained responsibilities. Here almost every single government agency interviewed described issues of peace and order in the mountain region which poses great risk to government officials who are directed to go investigate or monitor

activities in the San Antonio, RTR area. In the context of the Philippines, the national government defines peace and order as a continuous and active campaign against terrorism and criminality, including kidnapping, illegal drug trade and smuggling and street crimes among others. A member from the newly elected Butuan City Mayors office attributes the lack of physical monitoring in the mountain area to be a result of inaccessibility of the mountain area. "The problem again is this is somewhere very far away, we cannot afford to send military personnel so any small time activities they are still doing it is because there is no one physically there to stop them" (personal interview 07-01-3A, 2010). It is significant to note that this is the same individual who stressed the fact that as a newly elected official they will do what is in their power to "make more laws that emphasize on the violations and make penalties very visible. Make it real to the people, force them into justice" (personal interview 07-01-3A, 2010).

Interestingly, the two government agencies (CENRO and RDENR) suggested by other stakeholder groups to be directly or indirectly linked to the illegal mining operations were the same two stakeholder groups who failed to describe fear as a main element preventing government officials from fulfilling their job requirements.

> "Now if we provincial employees man the monitoring we are also afraid to go there because two or three people are also there fully armed. So we need escorts too not only three escorts but full company escorts. If ever they will fight against us, we can also sustain ourselves."
>
> (Personal interview 07-14-6AAA, 2010)

The same respondents described one government plan, which was unsuccessfully implemented. The plan was to monitor the legality of forest materials that were being shipped out of the watershed area were. They claimed that the current critical state of the area prevented such monitoring activities from being successfully carried through and sustained. One PENRO official stated:

"In fact we had a plan to put a check point in the area but we realized that the area is very critical many armed men are living in the upland because the illegal miners before have supported those armed men by providing them with ballots, provide the arms, they even provide them with consumption (food and water supplies). So there are wanted men that live in the area that are affiliated with the illegal mining activities. So as we know there are 5 wanted people living in that area supported by the illegal mining, miners. So those armed men are protecting the illegal activities so we cannot go in the area without escorts."

(Personal interview 07-14-6AAA, 2010)

When asked why the LGU's failed to monitor mandatory checkpoints in the area, the CENRO officer from Butuan City explained that "sometimes due to limiting funds we cannot exercise all of our functions" (personal interview 07-07-7A, 2010). Furthermore, this same CENRO official pointed out that what happened beyond Butuan City's political jurisdiction is not of their concern. However, the Taguibo Watershed covers four different political boundaries and the Butuan City government is responsible for the integrity of this watershed. Specifically when asked what activities this agency took in the monitoring of the environmental and water quality in the Taguibo Watershed to determine the causes of water shortage the CENRO official responded:

"As far as I know there was already a joint team created to investigate on that report. But the turbidity of water in the Taguibo watershed, well the team has gone to the site to conduct the actual investigation and of course I cannot speak, I can only speak on areas that fall under the areas that Butuan City has jurisdiction. There was investigation on that, and the report, the result of which is that there is no mining in Butuan City. There is no timber poaching found in Butuan City. So I cannot say exactly what causes turbidity is the mining because so far as Butuan City is concerned there is no mining operations there is no timber or logging operations. I do not know up stream, but as I told you before I can only speak for the jurisdiction of Butuan city."

(Personal interview 07-07-7A, 2010)

There is much discrepancy in perspective among the different jurisdictions, which prevents successful integrated watershed management efforts from taking root.

During interviews with other government agencies besides the Regional office of the DENR No. XIII and CENRO of Butuan City, it was pointed out that in fact, the previous Mayor of Butuan City, Democrito Plaza II, [17] had issued a mineral transport permit to an individual by the name of Ruben B. Dapeniagan on December the 16th of 2008. Unfortunately, this was never brought up in any of the multiple conversations with the CENRO Officer. It was surprising to hear from multiple stakeholder groups that the area from which the mineral transport originated, which is immediately adjacent to the Taguibo watershed, was declared a mineral-bare area by the MBG (personal interview 07-27-12A, 2010). A Provincial Mining Regulatory Board (PMRB) member speculated that the approval of the SSMP issued by Previous Butuan City Mayor Plaza II, was a way to illegally mine materials within the Taguibo watershed by filing a permit suggesting that they come from an adjacent watershed. In the case of mining in the Caraga Region, a PMRB member who is also an employee with the MGB, points out that permits in the Philippines tend to hold little to no importance:

> "So in our belief so that their (Mn miners) illegal activities would be legalized those engaged in the illegal mining secured a small-scale mining permit from the Butuan City Government (former Mayor Plaza II) even though at the very start it was stated by the MGB that the said area, which was granted the permit has no Mn deposits there. They just wanted to have the legal papers so that whatever Mn they were able to get from inside the watershed at Agusan del Norte side they could legally transport it outside the watershed through the Butuan City jurisdiction."
>
> (Personal interview, 07-08-6AA, 2010)

These parties do have the legal documents required, but as a member of the Diocese points out "they believe what they are doing is legal because they have the paper but it is still immoral" (personal interview 08-10-18A, 2010). Further conversation with another government agency

[17] Also known as 'Boy Daku'

however, provided additional evidence to support the idea that even in the presence of a valid permit, mining activities are not necessarily legal. One government official stated:

"But we can observe when we have applicants we can immediately hypothesis or see the person applying is an Amante or not. So during the processes of the applications these people who did not vote for the Amante's, are hesitant to apply for a permit (small-scale mining permit) in the sense that during the permit approval these permits would not be granted, and thus it would be a disappointment. For example the Amante's here in Butuan, so when I will be accepted back into (my political position) I will be scrutinizing some of the old records (previous small-scale mining permits), for example the one issued in Taguibo. Ultimately we will recommend these places for closers. Because there are no operations here, and these places here will only augment the operations to continue inside the watershed area."

(Personal interview 07-27-12A, 2010)

As demonstrated by the above excerpts, it is clear that permits in the region lack credibility. Even though the newly elected Mayor Amante of Butuan City gained office in 2010, he too is faced with issues of credibility and government corruption. What seems to be backing the permits is what some experts in the field of political corruption would describe as campaign support and voter kick-backs. Clearly, individuals who support elected officials feel confident that they will be granted a permit regardless of their project's ability to align with local mandates set forth by the legislative bodies. This idea was only infrequently brought up in conversation with stakeholder groups. This could be because people are afraid of the repercussions that can be associated with discussing such contentious issues. The fear of turning in those powerful officials who have taken part in dishonest activities created a barrier in the interview process. It was common that during interviews, especially those with government officials, I was asked to keep names confidential. For example, one interviewee stated, "Do not include my name because these are political issues" (personal interview 07-27-12A, 2010).

As described by one of the newly elected Butuan City councilmen, “If you are in power it is easy to get a permit for your own benefit. That’s why they joke here in the Philippines: what is illegal is legal mining, what is illegal is made legal, they make it legal. You can not issue a permit here in the watershed it is obviously illegal for that” (personal interview 07-01-3A, 2010).

Regarding the approval of the SSMP issued by the former mayor Plaza II, one interviewee stated: “As far as that you know the timing of the giving of the permit there was already something fishy about it. There is no mining, there is no ore, then why is there a permit” (personal interview 07-01-3A, 2010). This among other events stirred-up many accusations about the previous Mayor of Butuan City. People questioned whether or not the local government was directly or indirectly involved in the said illegal mining activities in the TRWFR. Many pointed out that corruption is common in the Philippines. Additional comments were made by many of the government agencies, besides the CENRO and RDENR offices, that under the local government of Plaza II, the “illegal miners were supported by the politicians in Butuan City” (personal interview 07-14-6AAA). “Those involved in the illegal activity are coming from the city” (personal interview 07-08-6AA). Although much of the conversations about the culprits responsible for the illegal activities were speculations,

> “Although we don’t have any proof of that, I don’t think they are lazy they are protecting certain interests. I don’t know if they are protecting certain interests because they received pay or maybe their superiors or people in power in the city are well asking them to act dumb and they might be afraid that their life might be threatened or their positions might be in threatened they might just be transferred somewhere else because they did not say yes to the powerful people”
>
> (Personal interview 8-17-16A, 2010)

There were a few cases presented during infield data collection which help to put some sound evidence behind the common belief that the former LGU in Butuan City was in part to blame for the illegal mining operations. Various representatives from the DENR-MGB RO No. XIII,

NEDA, BCWD, Diocese and the Provincial office of the DENR in Agusan del Norte provided such evidence. Several court case findings and mining tenure maps were shared. Lab results demonstrating heavy metal contamination over time were provided during interviews and personal photographs taken by local government officials illustrated some of the previous Plaza administration blocking the multi-sector investigation teams from conducting inquiries in the Taguibo Watershed area. All of the stakeholder groups listed above presented what little evidence there is to demonstrate the lack of harmonized efforts among agencies concerned with the protection and integrated management of the TRWFR, resulting from local government corruption. It was made apparent through personal conversations (06-26-2A, 2010) and written reports crafted as a product of the field investigations, that this lack of collaboration was being blamed on the Local Government of Butuan City, under the previous supervision of D. Plaza II, for hindering various collaborative efforts from conducting site investigations. For example, the former Parish Priest of the Ampayon area describes some of his observations from the area.

"When we had our monthly meeting in the Parish I tried to ask the local leaders to give some up-dates on what is happening in that area. Stressing to them that it did not have to be a religious or spiritual activities, we welcomed more general topics such as the peace and order in those areas. From that sharing I learned that there were illegal activities in the area. From the finding I tried to make some follow-ups in the area. Usually in the parish I have to conduct interviews for those who choice to go into married life and when I notice these particular people are coming from that area I also ask some questions to get more information about activities in the area. Then there are some visible signs of illegal activity. For example, the tracking of all these illegal goods out of the area [local IPs who were manning checkpoints kept a log book which recorded license plant numbers of the vehicles that pass through their jurisdiction also making note of the amount of content which was being transported]. When I visited the area sometimes I encountered these kinds of transportation of these kinds of products from the mountains. So the people are also sometimes afraid to tell what is going on because they are threatened by some of these operators. But generally it is visible to the human eyes that there are already illegal activities in the area. Not to mention a lot of heavy equipment being brought to the area, and visible people with private arms are being hired to protect the business. Worse than that there are some government vehicles being used. Others would say that there are some local officials from Butuan involved in the activities sometimes, they use policemen to protect them to be their escort and the people would not give any comment because they know that it is people of particular local government

units in control. They would not make any comment in regards to what was seen especially if those activities are clearly coming from local government and local officials."

(Personal interview 08-10-18A, 2010)

As one stakeholder group is able to capture power in order to manipulate the law in their favor, this enables them to make what is once illegal legal. Often described throughout all stakeholder groups is this idea of fear. The long excerpt from the Parish Priest demonstrates this by showing that even in a religious meeting; people still do not feel safe discussing illegal operations in their home barangays. Fear in the case of the TRWFR is a powerful tool used by the illegal miners. It was explained by many that there are many armed men in the area guarding the mines and the adjacent checkpoints (personal interview 07-14-6AAA, 2010). This idea of fear was further highlighted during my second visit to the BCWD. One of the workers there asked me "have you ever been to the area?" they continued to say "it's quite risky there, you better not go!" (personal interview 07-26-2C, 2010).

Many of the government workers described fear as one of the main reasons why they were unable to carry out their job responsibilities. A MGB officer explained that the DENR RO. No. XIII recommended that the MGB RO. No. XIII should be the ones to "blast the mining tunnel area so that it is inaccessible" (personal interview 08-13-12AA, 2010). The interviewee continued by saying "but one we do not have dynamite to blast the area and besides we were afraid of the area" (personal interview 08-13-12AA, 2010). Furthermore, a DENR-EMB Region XIII officer revealed in an interview that just one week after a checkpoint was established in Barangay Taguibo seven men were abducted and brought to the mountain area in RTR, Agusan del Norte 7-20-13A, 2010). The interviewee presented this event to the researcher as if an acceptable excuse to avoid going to the mountain area to investigate and monitor the natural resource extraction. Many of the stakeholders interviewed sympathized with those EMB

officials who were kidnapped. A large majority of the interviewees representing local government offices believe that the indigenous peoples in the mountainous area were hired by the ULMC to carry-out the kidnapping. Allegedly, three indigenous members kidnapped seven DENR workers as a scare tactic. One interviewee from the DOT stated:

"In some of the regional development council meetings they (the DENR-EMB RO. No. XIII) were bombarded with a lot of questions how come your agency is not…ect. And their head of office was saying how can you do something about it when you are confounded with guns what's more important your job or your life. Well what can we say those guys have families as well. So everybody just kept quiet."

(Personal interview 07-16-11A, 2010)

As a faculty member at FSUU pointed out in an interview, the DENR and even the EMB have the jurisdiction to investigate what is going on in the TRWFR. As pointed out by the interviewee:

"You (addressing the researcher) know what we did when we didn't know what was happening in the watershed which we are drinking from so we ask them (DENR) to go there and investigate they don't have to arrest anyone, but they were afraid to go there because they have to ask permission. I said they don't need to ask permission (from the IPs) like you don't need to go through a dialogue that would take months with the IPs. The government can do that, if the government sees something is wrong they can ask permission and say can we come in and if they say no then they go to court and get order but if they say yes you can come in, then why couldn't they just go up there. I have been telling DENR about that, like you go there, you are not going into something very private. There's nothing private about it, that's just their land. In fact I was telling them (DENR) about BIR (Bureau of Internal Revenue), BIR will just send notice and say ok I want to inspect your books, you don't need a court order for that they can just send notice saying they want to inspect your books because there is a complaint. But they (the DENR) never did that. You know Sarah, they have the power they just are acting dumb. Like that they are dumb and that's not very good."

(Personal interview 08-17-16A, 2010)

The interviewee went on to speculate the true motives behind the kidnapping and even went so far as to suggest that the kidnapping was a staged event by the government officials to

demonstrate that the matter in the TRWFR is violent and therefore should be left alone. It was further stated:

"up to now the police report says the people who kidnapped the DENR workers were IP because of the blockade (the checkpoint established by the DENR) they (the IPs) could no longer bring down their wood, so their children could not go to school so they were pressed to do that (kidnap the workers). Possibly that could be true that is what they say. But the other story which has not yet been told, the police never investigated them. The police never studied whether they were kidnapped. If you look at how many were kidnapped 7, I start to think, how could only two men with borrowed guys kidnap 7 grown men. Why couldn't they just do something. Sometimes you would say that maybe there really was no kidnapping it was just to create a situation that would make us (civilians) afraid of that area so that nobody would watch Taguibo, so mining could continue. And of course if they put the mining company there it would be too obvious so they put somebody else there (the IPs). But we don't have any proof to that, but it is really suspicious. Like 7 grownup men couldn't even over power 2 others with just very crude guns."

(Personal interview 08-17-16A, 2010)

To respond to the various illegal activities taking place in the TRWFR multiple fact-finding teams composed of representatives from all concerned agencies were invited by the Provincial Governor of Agusan del Norte to take part in the investigation of the alleged illegal activities, organized through the Special Order No. 01-09. The team was called the Provincial Multi-Sectoral Investigation Team (PMSIT). However, Butuan City LGU was not included in this investigation (Figure 2).

The team was to set out on July the 22nd of 2009, for an investigation of the area in Sitio Malinhawod, San Antonio, RTR, Agusan del Norte. Unfortunately the PMSIT was prevented to from passing through a Butuan City check point. Two employees of the LGU-Butuan City Environment and Natural Resources Office (ENRO), along with a Butuan City Police officer explained to the team that the "Honorable Mayor Democrito D. Plaza II, has ordered the city PNP late last night to man this check point located at Barangay Taguibo to prevent the PMSIT

from passing though" (personal interview 06-26-2A, 2010). Shortly after the team arrived at the checkpoint, additional LGU representatives including Mayor Democrito D. Plaza II, City Director PSupt Joseph Plaza of PNP- also the son of Mayor Democrito D. Plaza II-and ENR Officer Forester Alexander Alann arrived at the checkpoint. These powerful players made it clear that the PMSIT would not be permitted to proceed though the area because the PMSIT "failed to properly coordinate with the City LGU" (PMSIT report, 2009).

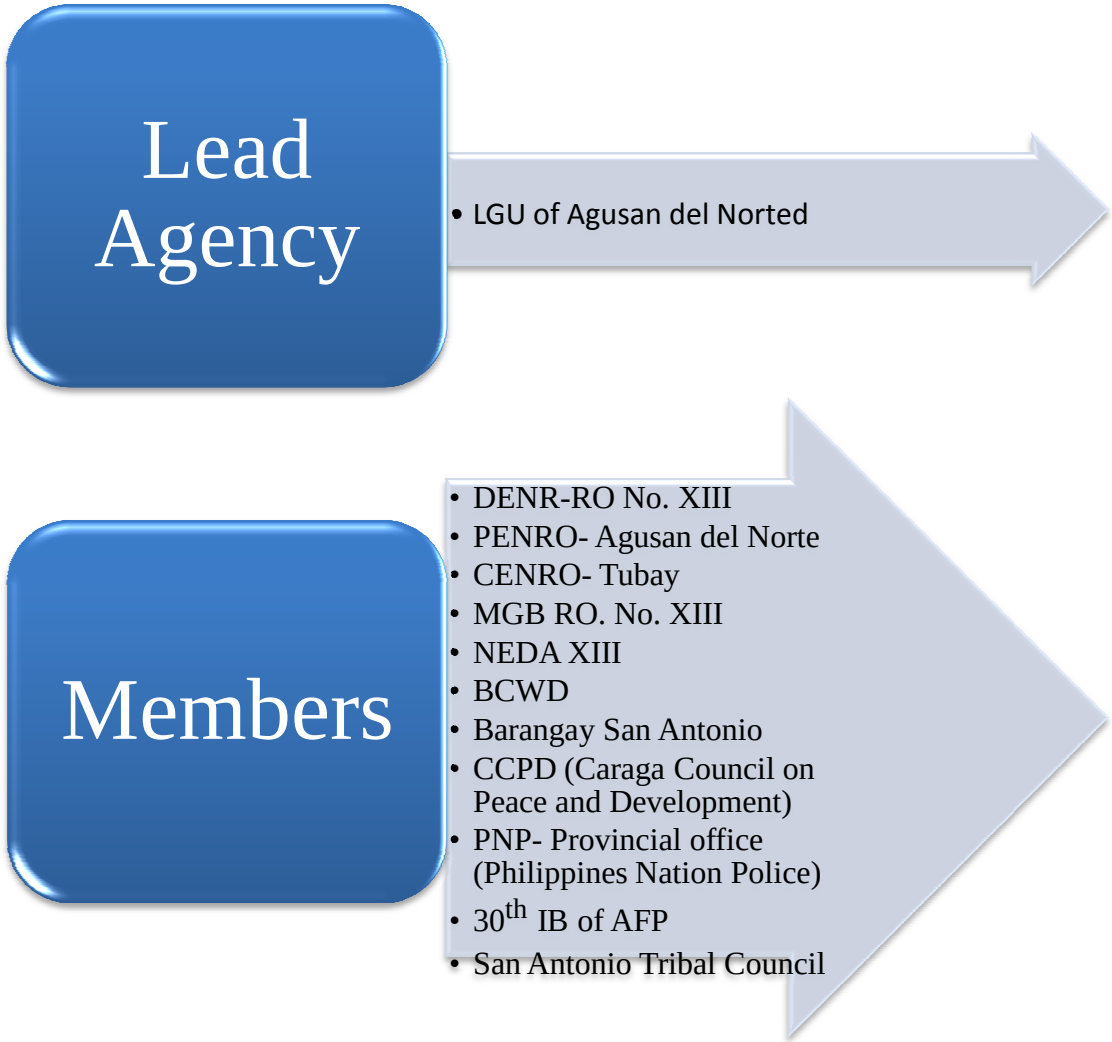

Figure 2 Composition of the Stakeholders involved in the Provincial Multi-Sectoral Investigation Team (PMSIT)

Note: For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this thesis.

Although the previous mayor and fellow officials were unavailable for questioning, one can see the conflict among political jurisdictions further complicates the natural resource-based conflicts which are already prevalent in the TRWFR.

Conclusion

In summary

As we see in this case study, the Taguibo River Watershed Forest Reserve is a complex and dynamic system of overlapping structures and functions, encompassing both verbal rules and legal mandates which, when combined, determine the fate of the overall well-being of the local residents and ecosystems. A general lack of synchronized laws and mandates allows for power to be captured within the Caraga region to benefit a select powerful few. Those individuals included regional DENR top officials, local government officials and more obviously the mining company leaders.

The literature would suggest that corruption in the context of decentralization amid the mining sector is a result of insufficient capacity at the local government level. The various government line agencies are unable to deal with the increase in responsibilities and jurisdiction they acquired through the devolution of power. However, those interviewed did not necessarily clearly state that their governments unit lacked capacity, but rather stated that fear they may lose their jobs or worse jeopardize the lives of their family or themselves was a key excuse for a lack of action-ability. Takyi-Asiedu (1993), Cohen et al. (1996), and Husted (1999) state that cultures with an unequal distribution of power tend to discourage questioning authority, and as a result, citizens of such societies tend to shy away from whistle-blowing activities when confronted with corrupt behavior. Thus, it makes sense that the greater the power distance, the higher the degree of corruption in the country. The illegal mining operations in the watershed were very far and

inaccessible to those individuals who are responsible for monitoring the activities within a protected watershed area.

The structural conflicts described throughout the in-depth interviews with the eighteen key stakeholder groups demonstrate this region's inability to achieve common ground around resource management. The ability for stakeholders to respectfully conduct deliberations, with the ultimate goal of reaching a collaborative solution to the environmental challenges is missing from this region. In the case of TRWFR, the ability to successfully hold deliberation around such contentious topics is greatly hindered due to the asymmetric nature of conflict in this region. It's important to note that conflict is not always a bad thing. For example, in this case study, water shortage and other conflicts led to the election of a new governing family to take office in Butuan City.

There were a few examples of high level public involvement in the Taguibo Watershed. Such high level public involvement activities included a Community Tree planting day where community members, government officials and other interested stakeholders come together and plant trees in the watershed area to contribute to rehabilitating the water quality. Another high level public involvement was community prayer; this is where the community comes together to discuss issues surrounding the watershed problems and to have a communal prayer to demonstrate the dedication the community has to save the Taguibo watershed. The community prayer attracts much attention from the media and draws students together too. Here participants can learn and study the watershed issues which is a high level public involvement.

Many stakeholder groups promoted the idea that changing people in political offices is a sure way to rid the current political system of its corruption. Others question if that will be enough.

The impressive entry into Butuan City hall by the newly elected Mayor of Butuan City, former Ampayon Barangay Captain Doctor Ferdinand Amante Jr. finally ended the 18-year reign of the Plazaz II family. Additionally, there is an optimistic feeling among Butuan Residents in hopes that the new and young elected city officials, whom they consider to be like-minded and well-educated individuals, will provide the necessary innovations and forward thinking needed to rid the region of its structural based conflicts. Unfortunately, the inevitable nature of watershed management, coupled with the fact that the TRWFR is broken down into four different political boundaries and classified with multiple tenure systems makes integrated management a challenge in the Taguibo watershed.

The political dynamics (power struggles) make the Caraga Region a particularly difficult area to equitably utilize natural resources in a sustained manner which would lead to broad-based socio-economic development. The complexity of the overlapping and fragmented government authority and conflicting land uses directly impacts the local communities' ability to maintain safe and healthy lifestyles.

The first research question asked 'why do those who hold power in badly performing countries lack capacity to make institutional changes?' A lack of resources, lack of horizontal integration among the government and public units, and limited resources tends to be reasons why individuals are unable to collaborate to solve environmental challenges. Also mentioned in the literature is the idea of fear among potential 'whistle blowers'. Fear was a common excuse as to why there was a lack of change in the environmental and social situation. Individuals, even those in powerful positions, feared losing their jobs. Even though there was photographic evidence incriminating a few key political figures from the Butuan City area (Plaza II family), no one wanted to finger-point. Thus, there is little to no evidence on record to incriminate those

responsible for the environmentally destructive and socially unjust activities which took place in the watershed area.

The second research question asked how the mining sector contributes to national development amid decentralization in the Philippines. As described in the mineral resource literature, mineral revenues, depending on the permit granted (large or small scale operations), should first accumulate at the local or national government level. However, when mineral extraction is done illegally, no matter if it is large or small scale, the only people who benefit are those who are directly linked to the illegal mining operations. In the case of the Caraga Region, the mining contributes to the sense of fear and livelihood deterioration, not acting as a catalyst for economic growth in non-mining sectors of the economy. For example, there is no revolving fund established which uses a portion of the mineral revenues to act as a source of funding for the rehabilitation processes after the mining operations are finished. In addition, kidnappings add to the sense of fear among community members.

Research question three tried to solicit locals' input on the best practices to help create more efficient, effective and responsive policy institutions. Traditional approaches to natural resources management and collaborative problem-solving don't always apply to environmental problems, which often unfold over long periods of time and spill across the borders of barangays and municipalities. However, the current watershed management plan is not successful at integrating different views from the different political agendas. At one level, environmental conflicts are about competing for access to limited resources. At a deeper level, they are about people's visions and ideas regarding themselves, their communities, their societies, and their futures. Understanding conflicts and promoting collaborative problem-solving in this case therefore calls for sensitivity to the substance of environmental problems as well as to the

different ways they are experienced and perceived across time and place. Political boundaries, biophysical boundaries and indigenous boundaries further complicate the environmental challenges present in the Taguibo watershed.

The final broad research question number four aimed at answering 'what can be done to provide continuous evaluation, feedback and partnership to the key stakeholders responsible for suppressing the growth of social inequality'. Findings from the inquire match up with the themes discussed in the literature. The Philippines is an example of a predatory government that has a high incidence of domestic conflict and civil wars. When natural resource utilization challenges occur in this sort of domestic environment, equitable broad-based socio-economic outcomes are especially difficult to achieve. The microeconomic implications of natural resources abundance suggest that it nurtures patronage, rent-seeking and asymmetric power struggles, resulting in policy outcomes that prevent broad-based socio-economic development. It is hard to achieve this broad-based sustainable development when the ones who are in charge of protecting the natural resources and community as a whole, are the same ones destroying it.

Solutions

Assembling and implementing an integrated natural resource management scheme in the Taguibo watershed

In order for the Taguibo Watershed Management Council to implement an effective integrated natural resource scheme, the collective community must identify the problems they all are facing. I would suggest that the council reconvenes to work through a few activities such as: a watershed inventory, problem identification process (the Situation, Source, Target, Pathway [SSTP] process), and the scoping phase (Heathcote, 2009). By going through the inventory and identification steps the council would be able to identify the main causes of pollution, also referred to as the "source" in the SSTP process (Heathcote, 2009). As a result of the

identification process, limiting factors would be identified by the council which tends to be responsible for preventing the management scheme from yielding the desired goals/targets of the council. This can be a very helpful step in keeping the council focused and on task at all times in the implementation phases, suggested to last for three ten year phases (Heathcote, 2009).

A suggestion I have for the watershed management council would be to come up with a few tables that help organize the baseline findings from the inventory stage. One table should present designated uses (of water and land), including those that are threatened and impaired. Then next to the impaired uses the team should determine suggested and know sources of pollution causing this current situation (point or non-point pollution). There can be various sources for each pollutant. This is an important step to direct the watershed council towards goals that are the most important to the collaborative group and help them to direct the limited time and resources to the most critical and threatened uses that can actually be achieved. Another table should be created that has the sources matched to the known causes and then another table that has impaired uses matched with goals.

Finally, a water quality summary should be created so that anyone can easily determine what are the top identified designated and desired uses, identified pollutants, identified sources of pollutants, identified causes of pollutants and see what are the suggested goals to be meet. This all helps to create a transparent management plan where anyone can easily access the main points in which the watershed council is striving to achieve. As these tables are made available, various discussions will spark and people might begin to clear misconceptions they have about the current state of the watershed quality issues leading eventually to a more commonly agreed upon management scheme.

The current Taguibo Watershed Management Plan (TWMP) does include various sections in the baseline report chapter (2) that talks about issues and concerns but I feel that it would be more helpful to add a separate section that specifically lists critical areas. This I think could help the watershed management council reduce the scope of this project. For example, if the mining areas and road construction sites were made critical areas then more attention would be devoted to those areas demonstrating to all stakeholders the severity of the impact humans are causing to the water quality in the Taguibo River. By creating the mining area as a critical area, stakeholders will realize that mining is a major part of the financial backing in the community (source of livelihood and income generation) however, there is a trade-off taken here between water quality and economic growth that must be valued by taking into account the environmental degradation and social costs associated with these mining activities.

Targeting the placement of best management practices (BMP's) is another way a better natural resources management scheme could be implemented in the Taguibo watershed to save money and time. The main point of applying BMP's is to use methods that are effective, practical, structural and/or non-structurally which prevent or reduce the movement of pollutants from the land to surface or ground water, or which otherwise protect water quality from potential adverse effects of human driven activities. Selecting the appropriate placement of a BMP to address a particular situation is important; not only to obtain the most economical solution to the problem but also to assure that the pollutant is effectively addressed in a timely manner and not simply moved downstream so the costs are barred by other individuals. If the wrong BMP is applied to an area, say for example education about conservation tillage is given to rice farmers in the low lands instead of high land pepper farmers, the BMP will not be put to the most effective use, thus resulting in a waste of time and money.

This is why it is very important to have a holist understanding of the situations, sources, targets and ways of evaluating those targets before BMP's are chosen to be implemented in certain location in the watershed. Selecting the appropriate BMP is also important with regard to landowner and community acceptance. A BMP may effectively address a pollution problem but if it is not acceptable to the landowner (too expensive, unfamiliar technology, resource intensive to maintain) or the community (unacceptable cost or secondary impacts) it is not likely to be successfully implemented and maintained.

A specific plan might target the placement of BMP's within a watershed to reduce sediments by brining the steering committee and technical committee back together to explicitly discuss design constrains and evaluation criteria. The purpose of this is to reevaluate the sources of the current situations, make sure those are still correct. Through the discussion on design constraints and evaluation criteria needed to monitor if sediment levels decline, various tables can be crafted similar to what was presented in chapter 5 of Heathcote's book (2009). As these various tables are created and represent various factors such as different management strategies and geographically where they are going to be applied, estimated cost of each of the strategies, estimated time of implementation, whether or not it meets constraints, and the estimates of the efficiency in reducing sediment loads are presented so the committee members will be able to better visualize the possible options. T his process will allow for trade-offs to be made more obvious. By allowing the steering and technical committee to pick the BMP or mixture of BMP's will result in the most time effective and cost friendly implementation scheme for sediment reduction in that area.

Suggestions for other BMPs include the implementation of small-scale mining BMP's to minimize adverse impacts of mining on the Taguibo water quality. In this case heavy metal

loading increases during times of increased extraction and can cause potential human risk to unsafe levels of manganese exposure. Other suggestions for BMPs are the implementation of stream bank build up BMPs to try to minimize the impacts associated with the illegal construction of the road that cuts through the entire Taguibo Watershed and is used by heavy equipment vehicles (large 8-16 wheeled vehicles).

If I were involved in the selection and evaluation process for urban BMP's I would have first chosen some BMP's to implement and they would include: illegal dumping control, pavement cleaning, and the creation of storm water storage facilities. I would also include urban BMP's in the management plan. As of now there is only agriculture and forestry BMP's in the Taguibo watershed management plan. Lack of urban BMPs can result in increased pollution levels because even though the high priority pollutant sources are coming from the mountain area the mass majority of users of the Taguibo river live in the urban area.

The Taguibo Watershed plan does not put forth adequate attention to understanding the performance indicators and did not always choose appropriate indicators. The management plan lists indicators but fails to associate them with the particular goal the indicator is aimed to assess. This lack of detail leads to confusion on what the data is actually measuring and thus leads to confusion on what management decisions should be made.

The use of basic indicators may allow the council member to feel more equipped to continuously evaluate their effectiveness of managing the natural resources in the watershed because more basic indicators can appear to be less of a taunting task. The Fecal Coliform indicator, the Phosphates indicator and the Land use indicator could be used. I would first chose the fecal coliform indicator because it is an easy tool that can be done by fairly unskilled workers and this

can be done many different times for a minimal expense. This information will help show if water quality standards meet the Philippines Clean Water Act which is a target in the management plan. Next I would pick to use the Phosphates indicator because the Taguibo watershed has a lot of non-point pollution sources. This indicator would help to identify proper pollution sources and work toward reaching the minimal levels required under the Clean Water Act. Lastly, I would use the land use indicator because of the difficult to manage physical topography of the Taguibo watershed. It makes economical and time sense to use land use Geographic Information System (GIS) technology to monitor land use patterns to make sure that mining is not happening within the protected watershed boundaries.

Two other indicators I suggest to be included, if resources are available would be to use the sand and gravel mining measure and stream flow. Sand and gravel because in Taguibo watershed there are a lot of small-scale quarrying and mineral extraction operations that are take place. In the watershed area erosion rates are high so understanding the rates of extraction could greatly help to determine if management scheme are successful at reaching the goal of decreased turbidity by tracking the amount of logged trucks hauling minerals though checkpoints. However, in this watershed area many activities are done illegally so this might not be a feasible indicator to use because there is no reliable data source. I suggest stream flow because it affects everything and monitoring this is not very costly. One main watershed goal is to meet growing potable water demands so knowing the stream flows over time can help the management council craft more effective management schemes. Knowing flows will also help the management council know the concentration of pollutants in the water which is of particular importance here in the Taguibo watershed because of the heavy metals added to the watershed due to the illegal mining operations.

I recommended that further research be conducted. More maps and visual aids such as aerial photos need to be used and research also needs to incorporate other pre-existing information sources such as indigenous ecological knowledge to help gain a better understanding of the growing global importance of watershed management projects. The significance of assimilating both the government level knowledge with the local resident's knowledge sources is it helps to obtain a more holistic view of the real world situation that is of particular interest. Because most of these watershed problems span across a diverse range of disciplines, there is a need to blend a mixture individuals with different backgrounds together. The hope is to address these complex problems, simultaneously with deep knowledge from the different perspectives to spark new changes possible even collective social behavior changes.

By having a clearer understanding that is commonly agreed upon can help to promote long last management success because there is a collective agreement on the crucial areas within the watershed that if dealt with first and foremost will result in the most successful outcomes. My main suggestion here is for the watershed management council to put together a sort of community based-data collection committee that's main purpose is to help validate the identified pollutions, sources and causes.

In the case of the Taguibo Watershed management committee, they failed to have the technical committee come up with a method to prioritize the pollutants, sources and causes. Thus, the council in my opinion is trying to monitor and evaluate way too many pollutants, sources, and causes thus their current goals are infeasible due to time and resource constraints. It is important that the prioritization process be conducted to help direct the council to know which pollutants are the most detrimental to the success of meeting the legal water quality standards and meeting the goals set forth by the council.

As I previously mentioned the Taguibo watershed plan fails to present clear timelines and completely fails to present cost-benefit calculations of the potential management options. This could be a great spot for upper level graduate students to conduct applied research that would benefit the surrounding communities. There are some effective laws and regulations but I feel that there are way too many laws that actually tend to have an adverse impact on the watershed management schemes. This could possibly be attributed to the fact that the many current laws overlap each other causing confusion on how exactly these laws should be implemented.

Limitations

Due to the complex nature of this study, there were several limitations. This research was conducted over a period of two months, thus limiting the ability of the researcher to make connections with key informants. Language barriers made interviews with IPs and local Taguibo Barangay community members an additional challenge. A translator was used during certain interviews. This is a potential source of miscommunication due to possible language barriers between researcher, interviewer, transcribers and interviewee. Translating and coding the raw data could have been improved by hiring local translators and encoders. If the process involves working in the local language, adequate resources need to be provided for translation. This is especially the case for the data and information collected through participant observations and key stakeholder group interviews.

The wealth of information that was generated exceeded original expectation and proved to be difficult to manage. A significant portion of the data was solicited in the native language which meant that a significant amount of time needs to be devoted to translation for future analysis. There is still a great deal of knowledge to be gleaned from information collected. This requires further review and analysis of the information. The use of experienced qualitative interviewers

is advised for more timely documentation of solicited information. It is therefore, suggested that a more structured form of recoding, gathering and handling of data be developed.

Due to the contentious nature of this natural resource-based conflict, confidentiality had to be ensured, but this proved to be a great challenge. In some areas where there was no proper venue to conduct interviews, data was collected in areas where others were easily exposed to what was being discussed. To address this issue, interviewees were given pseudonyms. Sufficient time is needed for the critical reflection processing. As a newcomer to the field of qualitative research, it was difficult for the researcher to set aside preconceived worldviews during the analysis and write-up phase. Scheduling time for sufficient reflection would therefore allow the researcher to deal with the unforeseen confusion that may occur. A possible suggestion would be to have a critical reflection process in the form of peer-to-peer reviews as far as data analysis and quality assurance is concerned.

Undertaking such a complex natural resource-based issue within a two-month span pushed administrative and logistic arrangements to their limits. However, it is believed that extending the timeframe of the data collecting phase may have caused there to be a loss in momentum. As pointed out by key informants the geographic location of the mining operations are located quite far away from the city center making it difficult to access. In addition, general concerns of research safety were a common constraint to site visits. Due to the contentious nature of this research topic, some stakeholder groups were unable to be reached for questioning, specifically the mining companies.

Furthermore, there are some general disadvantages in using semi-formal in-depth interviews. It is difficult to generalize from interview data and interviewing is done generally with a nonrandom

sample. In this inquiry, the intermediary was the main connection between interviewees and the research, thus the research was dependent on which the intermediary could schedule to be interviewed. But it is important to point out that the intermediary was chosen because of their academic affiliation with a local university and as a respected lawyer in the community. Finally, people being interviewed do not always say what they think. This lack of trust or prior affiliation between research and interviewee presents problems with sensitivity to interviewer bias.

Future Research

In view of the considerable constraints placed on the researcher, it would be advised to put in place additional site visits to the area to solicit additional stakeholder groups previously not interviewed. On major stakeholder group that was unable to be reached was the Plaza II family. Interviewing some of these powerful individuals could assist in uncovering some of the 'gray areas' surrounding the alleged allegations that the Plaza II family was directly linked to the illegal mining operations. Another key stakeholder group which should be interviewed in the future is the regional City Health Office. It is the City Health Office who has is to provide primary health care and environmental services. They too take a role in monitoring the quality of potable water supplied to Butuan City residents making them an additional agency that is responsible for the quality of water in the Taguibo River. Finally a local project, possibly connected with a local university in the area should take part in a long-term monitoring project to study the impacts of conflict on local communities' abilities to align themselves with their livelihood priorities.

APPENDICES

Appendix I. Summary of Data Collection
Table 5 Who, What, How

Method	Objective	Respondent(s)/site	Output
1)In-depth interview 8-4-1A	Solicit perspectives regarding illegal activities, impacts particularly to the IPs, captured power examples, overlap in land tenure and mandates	IP Gearmo of Agusan del Sur/ Prince Hotel restaurant	Verbatim transcripts
2)Participant Observation 7-28-1B	Gain better understanding of IPs values, make personal connection with potential interviewee	IP Gearmo & IP Mac/ Local Church Vinyard	Expanded notes after observation
3)Participant Observation 7-28-1BB	Solicit personal experiences and perspectives regarding the institutional arrangements	IP Gearmo & IP Mac plus family and visiting IPs/ Local homestead in Ampayon	Expanded notes after observation
4)In-depth interview 7-21-9A	Solicit personal perspectives and experience with peace and order during fact finding trips to illegal mining areas and institutional arrangements	Police Lue from Provincial group in Agusan del Norte	Verbatim transcripts
5)Follow up interview 7-26-2C	Inquire about Manobo-Mamanwa Tribal Council's Resolution No. 05-2009. Solicit additional perspectives from BCWD workers regarding the illegal small-scale mining operations and associated activities	BCWD office in Butuan City (two new workers and one same as first interview)	Verbatim transcripts
6)In-depth interview 8-5-5A	Try to understand the responsibilities and jurisdictions of this agency, overlapping mandates and any other perceptions on institutional fragmentation examples and suggestions for future improvements	Regional Berry DENR/RED's office	Verbatim transcripts
7)In-depth interview 7-6-4A	Solicit agencies objectives and responsibilities in protecting the livelihoods of communities in the TRWFR, understand agencies primary mandates and	NEDA Andrew/ NEDA office-front room	Verbatim transcripts

Table 5 cont'd

	gain examples of worker perspectives on institutional challenges		
8)Participant Observation 7-13-4B	Observe interaction with local communities in rehabilitation activities, validate different government line agencies ability to rehabilitate Mt. Mayapay	NEDA / tree planting trip to Mount Mayapay with Habitat for Humanity volunteers and NEDA workers	Expanded notes, photographs
9)In-depth interview 7-16-11A	Solicit perspectives and experiences with the environmental and social impacts of the illegal mining operations and associated activities, understand overlap in mandates and other institutional challenges	Department of Tourism Jeff, Caraga Region/ office open room	Verbatim transcripts
10)Follow-up interview 7-8-6AA	Clarify miscommunication, further explore certain topics related to institutional challenges	PENRO, Charlie/PENRO office Butuan City	Verbatim transcripts
11)In-depth interview 6-25-6A	Solicit perspectives regarding institutional challenges, agencies mandates, and future suggestions	PENRO, Charlie/PENRO office Butuan City	Verbatim transcripts
12)In-depth interview 7-14-10A	Solicit additional perspectives from this line agency regarding institutional challenges and describe role in monitoring and protecting local natural resources	PENRO (2) Vinny and Alfanzo community development assistances/ PENRO office Butuan City	Verbatim transcripts
13) Participant observations 7-16-10B	Observe community nursery project, see the innovation level of the efforts	PENRO nursery in Taguibo Barangay with /4 PENRO workers	Expanded notes, photographs
14)In-depth interview 7-27-12A	Solicit perspectives regarding institutional challenges, agencies mandates, mineral laws, tenure maps and future suggestions	MGB, Dan/ Provincial office meeting area	Verbatim transcripts
15)Follow-up interview	Obtain hard copies of mineral tenure maps, further discuss perceptions on institutional	MGB, Dan/ Prince Hotel restaurant area	Verbatim transcripts

Table 5 cont'd

8-13-12AA	challenges		
16)In-depth interview 7-20- 13A	Solicit perspectives from this line agency regarding institutional challenges and describe role in monitoring and evaluating quality of local natural resources	EMB, John/ EMB office	Verbatim transcripts
17)In-depth interview 8-12-13C	Solicit additional perspectives from this line agency regarding institutional challenges and describe role in monitoring and evaluating quality of local natural resources	EMB, Mark/ EMB office open space of desks	Verbatim transcripts
18)In-depth interview 7-1-3A	Solicit perspectives regarding institutional challenges and suggestions for future	LGU council men Brain / Mayors office	Verbatim transcripts
19) Participant observations 6-30-3B	Observe general participants in the first ever press conference with newly elected Hon. Doctor Ferdinand M. Amante Jr., get a feel for general theme of interested investors and observe what country are represented in the room	Press release with mayor and newly elected officials and visiting foreign investors/ LGU's conference room	Expanded notes
20)In-depth interview 7-5-14A	Solicit perspectives regarding institutional challenges and social + environmental impacts associated with illegal operation in watershed	Department of interior and Local government (DILG) Chad/ DILG office at desk	Verbatim transcripts
21)In-depth interview 7-30-8A	Solicit personal observations regarding impacts of illegal operations, institutional challenges and changes in cultural traditions	Datu Gregorio Antong/ San Antonio IP's hall	Translator used, notes expanded
22)In-depth interview 7-30-1AA	Solicit personal observations regarding impacts of illegal operations, institutional challenges and changes in cultural traditions	IP Dapitan/ San Antonio IP's hall	Translator used, notes expanded
23)In-depth interview 7-30-1AAA	Solicit personal observations regarding impacts of illegal operations, institutional challenges and changes in cultural traditions	IP DePetan/ San Antonio IP's hall	Translator used, notes expanded
24)In-depth	Solicit personal observations	Datu Jessie/	Verbatim

Table 5 cont'd

interview 7-26-8AA	regarding impacts of illegal operations, institutional challenges and changes in cultural traditions	PENRO office	transcripts with occasional interpreter used
25)In-depth interview 7-29-15A	Solicit perspectives' regarding the environmental impacts associated with the illegal operations,	Taguibo Barangay Resident Pracila/ local bodega	Translator used, notes expanded
26)In-depth interview 7-29-15AA	Solicit perspectives' regarding the environmental impacts associated with the illegal operations,	Taguibo Barangay Resident Mila/ local bodega	Translator used, notes expanded
27)In-depth interview 8-17-16A	Solicit personal perspectives regarding institutional challenges especially overlapping mandates	Butuan City resident, FSUU dean of law school Jojo/Homestead Butuan City	Verbatim transcripts
28)In-depth interview 8-12-17A	Solicit personal perspectives regarding institutional challenges especially overlapping mandates, and personal experience with environmental impacts of illegal operations	Eirah FSUU graduate law student/Dean of law school office	Verbatim transcripts
29)In-depth interview 8-12-17AA	Solicit personal perspectives regarding institutional challenges especially overlapping mandates, and personal experience with environmental impacts of illegal operations	Paulo FSUU undergraduate informational technology student/basketball court benches in FSUU Lobby	Verbatim transcripts
30)In-depth interview 8-13-16AA	Solicit personal perspectives regarding institutional challenges especially overlapping mandates & fragmented responsibilities and personal experience with environmental impacts of illegal operations	Father John president of FSUU/ FSUU office first floor	Verbatim transcripts
31)In-depth interview 8-10-18A	Solicit personal perspectives regarding institutional challenges especially overlapping mandates and land tenure & fragmented responsibilities and personal experience with environmental and social impacts of illegal operations	Father Leo with diocese previous parish priest of Ampayon	Verbatim transcripts

Table 5 cont'd

32)In-depth interview 8-10-18AA	Solicit personal perspectives regarding institutional challenges especially overlapping mandates and land tenure & fragmented responsibilities and personal experience with environmental and social impacts of illegal operations	Bishop/ homestead	Verbatim transcripts
33) Participant observation 8-10-18B	Observe community education project	Bishop and workers/ Bishops educational organic farming and fish farm pilot project	Notes expanded
34)In-depth interview 7-7-7A	Try to understand the responsibilities and jurisdictions of this agency, overlapping mandates and any other perceptions on institutional fragmentation examples and suggestions for future improvements	Bush is a CENRO officer/ in closed office	Verbatim transcripts
35)In-depth interview 6-26-2A	Try to understand the responsibilities and jurisdictions of this agency, overlapping mandates and any other perceptions on institutional fragmentation examples and suggestions for future improvements	General Manager and 2 other workers/ BCWD GM office	Verbatim transcripts

Legend: Month--Date--Stakeholder group category--data set

A= 1st interview on individual M only

C= Follow-up interview with individual M

AA= 2nd interview with individual T, from same stakeholder group as individual M

AAA= 3rd interview with individual W, from same stakeholder group as individuals M & T

AAAA= 4th interview with individual Z, from same stakeholder group as individuals M & T & W

B= participant observation

Appendix II. Emergent Theme, Code and Sub-Code definitions; Rules and Examples when applied
Table 6 Methodological Road Map

Associated RQ #	**Broad Themes**	**Emerging main-code (symbol)**	**Sub-code and Definition**	**Rule**
RQ # 3 perceived institutional challenges which present obstacles to mitigate NRCs related to land and water rights in the TRWFR?	Weak local Government (WLG)	Political Rivalry (PA)	**Heterogeneous political conflict (PR-HET):** Applies to the conflicts which occur between government line agencies as a result of the natural resource-based conflicts stemming from the debates over the distribution or regulation of natural resources (i.e. water, timber or soil)	Applied when a stakeholder describes confrontation among two or more government agencies surrounding the distribution and regulation of local natural resources found within Region 13
		Captured Power (CP)	**Graft (CP-G)**: Applies to the gain of money or advantage by dishonest, unfair or illegal means, especially through the abuse of one's political position	Applied when an respondent refers to an observation regarding a dishonest event that took place between two or more separate parties for the sole purpose of elite capture of natural resources and/or wealth

Table 6 cont'd

			Bribery (CP-B): Refers to the form of corruption involving money, soliciting or a gift given that alters the behavior of the recipient that is in charge of public natural resources	Applies to an interviewees' response that describes an event or story that demonstrates someone or some small group of people who are using their assets to persuade another person or group of people to take part in illegal or dishonest activities resulting in elite capture of natural resources for individual purposes instead of increasing the community's well-being

Table 6 cont'd

	Lack of effective institutional arrangements	Fragmentation of responsibilities and authority (FRA)	**Multi Jurisdiction (FRA-MJ):** Describes alterations made to original primary jurisdiction	Applied when a stakeholder describes a distribution or regulation role over natural resources that calls on multiple government agencies to act as lead agency on the same issue at the same time
			Lack of enforcement (FRA-LOE): describes when there is a lack of implementation of laws, mandates or other approved government rulings recognized as legal documents in the Philippines, specific to preserving, monitoring or sustainably developing local natural resources	Applied when a certain individual or stakeholder group describes a responsibility-as described by job description, legal mandate or in terms and conditions of contracting agreements-does not match up with on the ground actions

Table 6 cont'd

			Lack of actionability (FRA-LOA): Applies to a respondents' claims that describes a reason for lack of on-the-ground-action taken by a certain stakeholder group to protect, preserve, monitor or sustainably develop local land or natural resources at the same time and in the same space	Applied when someone refers to possible source leading to a certain agencies lack of capacity which prevents a stakeholder group from successfully and honestly following through with their department's current written and verbal mandates (i.e. rules-in-use; department mission statements)
		Discrepancy (D)	**Delay (D-D):** Refers to conflicting mandates	Applied when respondents mention a discrepancy in mandates because of some structural issue (such as timing of legal mandate approvals) or confusion as to whether or not older mandates take precedence over new ones
			Natural resource tenure system (D-NRTS): Applies to disparities in land development or resource utilization plans as outlined by either verbal or nonverbal rules	Applied when there is disagreement or confusion as to the legality of current, or proposed natural resource uses

Table 6 cont'd

RQ # 1 & 2 perceived impacts on the livelihood assets and water quality in the TRWFR, Caraga Region?	Growing awareness of mining companies failure to align with needs of local communities' livelihood priorities	Credibility (C)	**Trust(C-T):** Applies to a current situation that demonstrates lack of respect between two or more people or groups of people	Applied when respondents refer to distrust specifically in the credibility of local stakeholder groups; awareness of corruption
			Intra Conflict (C-IC): This describes the actions taken by individuals who choose to maximize personal utility versus supporting the overall community's' well-being within one stakeholder group	
			Inter Conflict (C-F): Applied when someone or some group of people claim to be unhappy with the current status quo of natural resource utilization due the growing misalignment between natural resource distribution and regulation with the current insiders' livelihood priorities	Applies to an interviewees response that demonstrates actions taken by a person or group of people within the same stakeholder group which causes an issue
			Observed (WQ-O): Applies to an observation (primary or secondary) regarding a perceived decrease in Taguibo River water quality	Applies when respondent provides a comment that demonstrates a feeling of unfair compensation for goods (natural resources i.e. water, timber or soil); services (employment i.e. forest guard); or the loss of culture compared to the other stakeholder groups

Table 6 cont'd

		Water quality (WQ)	**Concerned (WQ-C):** Applies to worries that a stakeholder holds regarding the negative impacts that may occur as small scale mining and associated operation continue inside the TRWFR boundaries	Applies to stakeholders responses that represent an observation regarding decreasing water quality situations due to the illegal small-scale mining and associated operations in the TRWFR between 1995-2010
			Concerned (WQ-C): Applies to worries that a stakeholder holds regarding the negative impacts that may occur as small scale mining and associated operation continue inside the TRWFR boundaries	Applies to stakeholders responses that represent a concern that they have regarding the potential negative impacts that may occur to the environment, their health or livelihood priorities
RQ # 4 possible pathways to mitigate negative externalities, perspectives from insiders'	Changes to local government leaders & innovations: social & technical	Mitigation (M)	**Institutional change (M-IΔ):** Describes a possible social or structural innovation that may help correct some of the institutional challenges surrounding NRCs in the TRWFR	Applies to the mention of technological innovations that can potentially help to alleviate some of the non-point water sources impacting the Taguibo River quality

Appendix III. Conceptual Framework, conceptualizing the drivers of natural resource-based conflict
Table 7 Matrix of Specific Research Questions

Conceptualizing the drivers of natural resource-based conflict in the TRWFR					
	Research Question # 3 Perceived institutional arrangements which prevent synergy and action-ability from taking place?		**Research Question # 1** Perceived impacts of small-scale surface Mn mining on the water quality in the TRWFR, Caraga Region?	**Research Question # 2** Perceived impacts of small-scale surface Mn mining on the livelihood assets in the TRWFR, Caraga Region?	**Research Question # 4** Possible pathways to mitigate negative externalities: perspectives from insiders'
Broad Themes	**Weak local government**	**Lack of effective institutional arrangement**	**Growing awareness of current natural resource management practices failure to align with national water standards**	**Growing awareness of mining companies failure to align with needs of local communities livelihood priorities**	**Changes to local government leaders & innovations: social & technical**

Table 7 cont'd

	Political Rivalry (**PR**) • Heterogeneous conflict (PR-HET)	**Fragmentation of responsibilities and authority** (**FRA**) • Multi Jurisdiction • Lack of Actionability (FRA-LOA) • Lack of Enforcement (FRA-LOE)	**Water quality (WQ)** • Observe (WQ-O) • Concern (WQ-C)	**Credibility** (**C**) • Trust (C-T) • Intra conflict (C-ICa) • Inter conflict (C-ICe)	**Mitigation** (**M**) • Δ to water system (Δ WS) • Institutional Δ (IΔ)

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