

Local Content Development Framework in Mining Context: The Case of Pantukan, Compostela Valley, Philippines

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Abstract: *This case study aimed to describe the status of mining industry, the status of the backward linkages, the forward linkages and the sideward linkages of mining industry; and formulate a local content development framework of Pantukan, Compostela Valley Province, Mindanao, Philippines. The present investigation discovered that mining industry in Pantukan was classified into two sectors, the large-scale mining sector and the small-scale mining sector and are operating in a distinctive manner and comprised of diversified players which created competition among players leading to more efficient and effective value chain. The existing backward, forward and sideward linkages, although not fully establish, is an indication that local content development is possible in the mining areas of Pantukan. Four areas shall be considered in local content development in the context of mining in Pantukan under value chain approach, to include the industry structure analysis, core competencies analysis, segmentation analysis, partnership and collaboration.*

Keywords: Associated Firms, Incentives and Opportunities, Linkages of Mining, Local Content Development, Mining Industry

1. Introduction

Background of the Study

The evolution of the strategic drivers of the mining sector has followed global trends and public opinion, but they also have been shaped by the significant role that the mining sector plays in a country's economies. These drivers are forces that can impact significantly on the outcome of a mining project.

In the Philippines, mining industry is considered as a potential key driver of growth. Mines and Geosciences Bureau (MGB) noted that the country is ranked top five in the world for overall mineral reserves, second in gold and third in copper resource with an estimated value of 1367.0 billion US dollar (ANZCHAM, 2013). The government and the community should recognize the value of its abundant mineral resources like gold, copper, iron and nickel, and the need to work with the mining industry, as it will be a big ticket out of poverty if done effectively and efficiently (Jasareno 2012 & Philippine Industry Leaders, 2012).

A wide range of activities under mining value chain stimulates economic growth in the national, regional, and local economies. In 2011, the gross production value for metallic minerals was PhP122.58 billion (\$3 billion), of which PhP63.14 billion (\$1.6 billion) came from gold production.

Despite the improved earnings of mining industry over the years, however, its contribution to the gross domestic product remain insignificant ranging merely from 0.6 to 1.0 percent of the GDP in 2012 (Senate Economic Planning-Philippines, 2013). Main reason is the unregulated illegal mining

operations wherein based on the record of MGB there are only 34 producing mines in the Philippines in 2011, which tantamount of saying that the industry is quite small.

Given this reality, the primordial challenge of the government today is to expand economic benefits of mining industry. Strategies and programs has to be identified that would maximize and broaden the economic linkages in the upstream, downstream and sidestream. A considerable attention has to be made on strategies to increase the level of value added or the beneficiation drawn from the primary and subsidiary sectors who will be involved in the chain of mining industry to further intensify its contribution to the economy.

The recent boom of mining industry in the Philippines, particularly in the Mindanao, gave rise to potential opportunities for the development of other sectors as well as the local economy arising from the supply and demand from a wide-range of activities from exploration stage, down to extraction, processing, refining, fabricating and distribution of final products. Based on the study of UA & P as cited by Villegas (2007), the contribution of mining industry is not just to the economy but also to the common good. The common good is not only equivalent to the tax paid and export earnings but also the employment it generates that nurture the small and medium-scale industries. This is commonly the multiplier effects of the industry to local economy wherein for every 1 peso increase in demand of mining sector, a PhP 2.6 additional contribution to the domestic economy will be created. In year 2011, metal exports reached PhP 115.2 billion with a multiplier effect of PhP 299.52 billion aside from 36.9 billion contribution of the total household income multiplier effect and PhP 10.8 billion employment multiplier effect (Villegas, 2012). This is solid

evidence that the government should intensify the direct and indirect contribution of mining industry by looking into the multiplier effects.

However, until now there are only few scientific studies conducted to capture the direct and indirect contributions of mining to local economy with more emphasis on the multiplier effects probably because secondary data is difficult to secure because of confidentiality. Hence, the present investigation focuses on the qualitative assessment on the status of mining industry in the context of Pantukan, Compostela Valley Province.

The analysis was also extended on the assessment of the status of backward linkages (the supply sector), forward linkages (demand sector) and sideward linkages (i.e. Policy, Plans and Programs, Research and Development, and Technology); and to develop a local content development framework for Pantukan. The framework to be developed would help in strengthening and enhancing existing and rejuvenating linkages between mines and other sectors in the value chain of mining industry in the area. It is crucial in the sense that Pantukan is on course to experience a transformational change over the next decade due to its boom in natural resource extraction, specifically in gold and copper. It is now the top priority of Pantukan on figuring out the best way to manage the sources of revenues for the municipality, how to best invest this revenue into the core pillars of the economy such as infrastructure, health and education, and how to ensure that the tremendous investment tied to the mining industry helps further stimulate local market growth, small-and-medium enterprise development and jobs creation for local people.

Statement of the Problem

The study aims to develop a local content development framework for mining industry in Pantukan, Compostela Valley Province. Specifically, the study aims to answer the following questions:

1. What is the status of mining industry in Pantukan in terms of:
 - a. Structure; and
 - b. Mining incentives and opportunities?
2. What is the status of backward linkages of mining in Pantukan in terms of:
 - a. Associated Firms; and
 - b. Incentives and opportunities of Linkages?
3. What is the status of forward linkages of mining in terms of:
 - a. Associated Firms; and
 - b. Incentives and opportunities of Linkages?
4. What is the status of sideward linkages of mining in Pantukan?
5. What is the local content development framework in the mining context of Pantukan?

Objectives of the Study

The study's prime objective is to develop a local content development framework in mining context that will help

strengthen and enhance the existing linkages between mines and other sectors in the value chain of mining industry in the Municipality of Pantukan.

Significance of the Study

The local content development framework in mining context of the Municipality of Pantukan, Compostela Valley Province that will be developed would serve as a standard structure which mining companies, government and other actors in the area of supply chain can commit to action. It will serve as tool for an integrated approach to sustainable development in the mining areas and to ensure that benefits and opportunities associated with mining activities in Pantukan are shared with, and contribute to the long-term sustainable development.

Finally, the result of the study will also provide a body of knowledge for mining industry and the sectors involved in the value chain of mining industry as they seek to clarify expectations that mining industry enhanced domestic market growth, enhanced local industrial base and the general economic development.

2. Methodology

Research Locale

From Pantukan Comprehensive Development Master Plan, Integrated Development Framework, 2000, the municipality of Pantukan is known as one of the oldest towns of Davao region, Mindanao. Pantukan was created into an independent and regular municipality on the 13th of November in the year 1936 through Executive Order No. 64 issued by then Pres. Manuel L. Quezon.

The Municipality of Pantukan is also noted for being rich in mineral resources particularly copper and gold and ranked fourth in gold production in the province. Gold mining activities in the area began to soar in the late 1980s. According to MGB, around 25,000 people are considered as miners, millers and operators who are deeply dependent on the mining industry in Pantukan. The current mining industry structure of Pantukan features only 1 large-scale miner who was permitted for exploration activity. Furthermore, an increasing number of registered small-scale miners were noted in the area. In the year 2009, a total of 7 permittees were reflected in the report of the office of Business Permit and Licensing and it lifted to 14 in August, 2014. The small-scale mining operations are within the approved MPSA area of approximately 1,548 hectares owned by NADECOR/Benguet Mining Corporations and/or Mineral Production Sharing Agreement(MPSA) application of Pantukan Minerals Corporation (PMC), which has an area of about 4,234 hectares. Parallel to that, about 500 illegal small-scale mining operators/tunnels who are not the valid holder of mining permits/contracts nor having operating agreements with the legal holders of MPSA and MPSA applicant (CDP-Pantukan, 2000).

Methods Used

The study used case study design of qualitative type of research. Case study was employed as it suited to the prime objective of developing a local content development framework of mining in Pantukan. A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 1994). Hence, qualitative case study design is an appropriate research method for the formulation of the local content development framework in the context of mining in the municipality of Pantukan.

Sources of Data

Data collection was done through primary sources. Primary data source included key informants for the study. Primary data was derived from the answers or inputs of the respondents from the different economic and business sectors in Pantukan who are directly or indirectly involved in the mining operations using in-depth open ended interview. In depth open ended interviews allow the researcher to ask questions and listen to the answers and then follow up with further questions to really understand what people think and feel (Singawinata, 2006).

The key informant interview (KII) was conducted with respondents coming from the different business and economic enterprises' owners and operators who are directly and indirectly involve in the mining industry operations. Representatives from the Local Government Units of Pantukan and from the Office of the Municipal Mayor were also considered as key informants.

In addition, secondary data particularly the list of industries operating in the area as well as the list of policies and ordinances which were found beneficial in the analysis of the study were also gathered from the documents of the Municipal Local Government Office of Pantukan and the Provincial Local Government Office of Compostela Valley. Records published by DENR-MGB and other agencies containing relevant data and information were also used in the study.

Data Gathering Instrument

The main data-gathering instrument used in this study was a semi-structured interview guide with open-ended questions. Semi-structured interviews consist of several key questions that help to define the areas to be explored, but also allows the interviewer or interviewee to diverge in order to pursue an idea or response in more detail (Gill, Stewart, Treasure & Chadwick, 2008).

The instrument used to collect the data was formulated by the researcher. The guide questions that were asked during the interview for determining the status of the mining industry were the same guide questions used for determining the status of the backward and the forward linkages of mining. Another set of guide questions was used in determining the status of the sideward linkages of mining.

Desk review was done from the documents provided by Local Government Unit of Pantukan and from the records of Provincial LGU.

Sampling Technique

The respondents of the study such the key informants were selected through a purposive sampling. Purposive sampling was generally used in case study research (Creswell, 1998; Miles & Huberman, 1994). It can be applied to research in a number of ways such as in preliminary studies where the researcher is still testing the feasibility of a proposed study (Poggie 1992) and case studies (Dolisca et al. 2007, Parlee & Berkes 2006).

The target key informants were the head of the different offices in the Local Government of Pantukan, such as the Municipal Environment and Natural Resources Office, Office of the Economic Enterprise Unit, Business Permit and Licensing Office, Engineering and Infrastructure Office, Municipal Agriculturist Office, Municipal Health Office, and Human Resource Development Office. On the other hand, key informants for backward and forward linkages were composed of owners and operators of the tunnels, mineral (gold) processing plant and ball mills, and the different business firms in Pantukan. A total of twenty three (22) respondents were considered as the main source of data in the study. Confidentiality of the participants was also ensured by not disclosing their names or personal information in the research.

Procedure of the Study

Data gathering instrument, in a form of semi-structured interview guide with open-ended questions which was developed by the researcher based on the research questions. Selection of indicators used in answering the research questions and validation of the indicators by experts were done through consultations and with the use of references from published documents and literatures.

To enable the researcher to make some modifications to the instrument based on the results, pilot testing of instruments was conducted to the selected key informants. Key informants' consent and approval were secured. Before an interview takes place, the respondents were informed about the study details and given assurance about ethical principles, such as anonymity and confidentiality. This gives respondents some idea of what to expect from the interview, increases the likelihood of honesty and is also a fundamental aspect of the informed consent process (Gill, Stewart, Treasure & Chadwick, 2008). To protect against bias and able to capture the details of the interview and provide a permanent record, all interviews were voice recorded and were transcribed verbatim.

Data Analysis

Qualitative method of data analysis was used and was employed in extracting, grouping and abstracting findings. Case study data analysis generally involves an iterative, spiraling, or cyclical process that proceeds from more general to more specific observations (Creswell, 1998; Palys, 1997;

Silverman, 2000) and may begin informally during interviews or observations and continue during transcription, when recurring themes, patterns, and categories become evident. Once written records are available, analysis involves the coding of data and the identification of salient points or structures (Miles & Huberman, 1994).

The qualitative approaches that were used in this study were the key informant interviews (KIIs) and review of related documents and literature. The results of the qualitative approaches were in the form of descriptive information on the perceptions of the key informants.

Thematic Content Analysis

Thematic content analysis was also used to determine the status of backward, forward, and sideward linkages of mining industry which is significant in the formulation of the framework of the local content development in mining context in the case of Pantukan.

Thematic Content Analysis (TCA) is the most foundational of qualitative analytic procedures and in some way informs all qualitative methods. TCA is a descriptive presentation of qualitative data. As cited by Anderson (2007), qualitative data may take the form of interview transcripts collected from research participants or other identified texts that reflect experientially on the topic of study.

Triangulation Method of Analysis

Triangulation method of analysis was administered to corroborate the findings of the study in order to develop the local content development framework. Triangulation refers to the use of more than one approach to the investigation of a research question in order to enhance confidence in the ensuing findings

3. Summary

Based on the analysis of the study, the following findings are drawn: Mining industry of Pantukan was shown to have a wide range of challenging opportunities for the improvement of local economy. The perceived potential opportunities of the industry trigger 78 mining players to enter into mining operations. Of these players, 26 are classified as tunnel operators, 25 are ball mill operators, 15 are gold processing plant owners, and 12 are gold buyers. These players play vital roles and functions in the hierarchy of mining operations such as prospecting and or exploration, extraction, processing and distribution or marketing.

The first stage of mining process is Prospecting/exploration was which are practiced by small scale and large scale miners. There are ten entities applied for mining exploration permit, eight of which are large firms while the remaining are individual miners or financiers. The second stage was extraction or opening the mineral deposit or tunneling. This is done by abanteros and atraseros to excavate opening from the surface to access more deeply buried deposits. The third stage was processing wherein the extracted ores from mine tunnels was processed in the ball or rod mill plant. At present, 177 rod and ball mills are operating in different areas of the

municipality, 100 are found in Panganson, 30 are in Upper Gumayan, 20 in Lower Gumayan, 15 in Lumanggang and 12 in Biasong. The fourth and last stage of mining production is the distribution or marketing which are categorized into formal and non-formal. Formal market are those buyers with license while non-formal are those individual, organization or corporation who traded gold in black market. In terms of mining industry incentives, miners are triggered to enter into mining because of the richness of mineral reserves, presence of potential financiers, availability and accessibility of inputs, and the presence of accessible gold market with competitive price and income. Despite the incentives of mining, players have encountered some issues and challenges such as the new regulatory policies that is tagged as anti-small scale operation and pro-large-scale mining. Aside from that, the proliferation of small scale miners was also considered as a threat to industry as it creates high competition and declined mineral reserves. Other issues identified are the unstable peace and security, the need for new technology and the absence of central market and the presence of black market that delimits the contribution of mining to local economic development.

The study also explores the current status of the supply side of mining industry. As revealed, there are three firms associated in the supply side of mining. These are the landowners, financial sector, and the manufacturing, retail and merchandizing sector. There associations to the industry are driven by high profit form ensured market outlets, high bargaining power, small number of alternative upstream suppliers, and the low degree of customer concentration. The issues and challenges faced by upstream firms are the poor road networks, peace and security, and the unrestricted market that expands upstream players.

When it comes to forward linkages, there were three major sectors closely linked in delivering the refined precious minerals to its end consumers. One of these is the processors such as ball/rod mills, smelting and refining plants situated near extraction sites. Some of the large firms also provide such kind of services to small miners. This series of procedures required a good number of workers and could run from four (4) up to several hours depending on the amount of ores or extracted gold to be processed. In case of the distribution of the ores or the gold, the owners and operators of the mines are the main actors. Record also shows that there are seven (7) trucking and hauling services and other numerous means of transportation such as motorcycles as well as domesticated animals such as carabaos and horses in the area. As to the transportation of the finished product to its buyers, majority of small scale miners who sells their gold locally uses the most common means of transportation, the motorcycle while some financiers collected the gold directly in processing plants by means of either private or public transport. The final sector closely involved in the downstream industry of mining in Pantukan is the end users. This sector is composed of the direct gold buyers, financiers, jewelers and the buying public. If observed closely, several models can be derived from the chain of supply beginning right after processing up to the end users of gold or its consequent products. The benefits and opportunities derived by the local downstream industries from the transactions made with the mining sector in Pantukan are the presence of mining ores that fuels forward linkages, the high bargaining power. On the

other hand, issues encountered of these agents are the safety and security, weak mining business policy/ordinance, and the threats from importing ores.

As for the sideward linkages of mining in Pantukan, it was found that BLGUs, MLGUs, PLGUs, the DENR-EMB, and the miners association/organization and corporation are directly linked to mining industry operations. Their association created incentives and opportunities particularly the creation of local revenue, gaining public trust through mining ordinance implementation, and the revision of revised tax code which increases local revenue. However, there are issues and challenges faced by their actors such as the conflicting or overlapping mining policies and the LGU capacity.

Based on these findings, a local content development framework is developed. This framework contains different pillars that shall be an attention to address the gaps in the industry, and in the backward, forward and sideward linkages. Under mining industry, pillars developed are mining characterization and network, and core competencies identification and development. In backward linkages, inter-firm interconnectedness, and financial pillars have to be considered while market segmentation and clustering, the enhancement of local mining business, as well as research and development are the pillars for forward linkages. Lastly, improved mineral revenue management, strengthened governance instruments, and the partnership and collaboration are important to acknowledge for sideward linkages.

4. Conclusions

In view of the findings of the study as a result of qualitative analysis, the following conclusions are drawn:

Mining industry of Pantukan is comprised of diversified players. This diversity creates competition among players leading to more efficient and effective value chain.

Each of the stage of mining production opens an opportunity for forward linkages. The primary agents at the downstream were the ball mills and processing plants for small scale miners; the mineral buyers; and construction. Parallel to that, small and medium enterprise particularly jewelers and pawnshops were considered as subsidiary sectors under forward linkages. The establishment of these actors indicates that the mining industry in Pantukan is growing and locally accepted as driver of growth and development. It also helps in the intensification of the economic benefits brought by mining operations through the creation of external economies.

Sideward linkages are considered as the supporting system for the industry to prosper. Elements like industry management, human resource management, finance and accounting, technology development and mining governance have to be given an emphasis in the context of local content development in Pantukan.

There was a presence of sector/firm's dependency. However, despite its dependency, value chain agents were still working

independently and in varied degree of linkages. Hence, it is concluded that each of the actors in the chain are considered as important elements to further improve the mining-based local economy of Pantukan.

Lastly, the existing backward, forward and sideward linkages, although not fully establish, is an indication that local content development is possible in the mining areas of the region especially in the municipality of Pantukan. These would further signify that the ability of mining to generate backward, forward and sideward linkages is the most important indicators of the success of operation not just in Pantukan but to the country, as a whole. To ensure local content development in mining context, four areas shall be considered in local content development in the context of mining in Pantukan under value chain approach to include the industry structure analysis, core competencies analysis, segmentation analysis, partnership and collaboration.

5. Recommendations

The municipality of Pantukan, Compostela Valley Province of Mindanao is known for a long time as a potential source of minerals in region. In the near future, mining operations will be considered as the engine of growth of the region if and only if it will be utilized in an efficient and most effective manner. Hence, the following recommendations are drawn in order to ensure the maximization of mining potentials in the long run.

i. Enhanced Business Engagement. Considering a wider process in mining industry, the Municipality of Pantukan could further induce local content development by intensifying the backward, forward and sideward linkages allowing other agents to enter into the chain. Such agents to consider would include the manufacturing industries, financial investors, and other small and medium enterprises. A promotion of spillover effect and creation of linkages is also encouraged to further increase the multiplier effect of mining industry.

ii. Enabling Industry Environment. Further develop the clustering of small scale mining firms since a strong mining industry is a critical component in achieving and sustaining upstream and downstream industries. A concerted/combined public-private effort as well as enabling, aligned government policies and support measures especially on peace and security without killing industries' interest would be useful mechanisms that would collectively address challenges and opportunities.

iii. Domestic Processing and Manufacturing. At the mining firm's level, it is also high time for the mining industry to move toward more domestic processing and manufacturing to make growth in the sector and more inclusive as it was observed that most of the players on that stage of production are foreign business firms. The government is suggested to create and introduced a legislation that would mandate large mining enterprises especially foreign ones to set up processing facilities in the area. The establishment of processing plants would generate more tax

revenues and more employment opportunities in the local economy of Pantukan.

iv. Improved Harmonization of Activities. It should be part of the system of the governmental bodies to observe harmonization of activities and their processes that is something to do with the value chain of mining and the local content development.

v. Strategies to Reduce Dependency. Design strategies to reduce the dependence of backward and forward industries to mining firms and encouraging the creation of non-mining related activities in mining areas to facilitate the post mining transition and sustainable development. This is a practical proposal acknowledging the limiting capacity of the mineral resource reserves in Pantukan.

vi. Monitoring and Evaluation. It was found in the analysis that there was no clear system and mechanisms to monitor industry status or conditions. Hence, it is proposed that the government put in place a systematic structure, mechanisms and a clearly defined measurement indicator that would track down industries' progress. A central local database has to be installed to monitor and assess the significant contribution of the industries as well as mining firms in local economic development thus ensuring transparency during the whole value chain.

vii. A More Holistic Local Content Development Framework. The local content development framework developed in the present study is recommended to be used as input in coming up with a more holistic agenda for the municipality of Pantukan. Holistic in the sense that it would consider other areas which was failed to capture in the present investigation such as the institutional, social and environmental aspects to advance economic growth and development.

viii. Research and Development. Lastly, it is recommended that research and development activities shall be actively pursued to come up with an evidence-based policy, projects or programs align with the local content development in the municipality of Pantukan, Compostela Valley Province. More research is needed about methods and mechanisms, which allow the stakeholders to assess and to follow up the performance of the mining sector and the subsidiary firms not only in terms of the revenues but also integrating social and environmental aspects, like a set of sustainable development indicators. Additionally, more work could be done about the understanding of the relation between mining and poverty, analyzing specific cases at local and regional mining areas in order to identify the social, economic and environmental variables and conditions that improve or diminish people's life conditions to attain sustainable inclusive growth and development.

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