Pre-KAP (Knowledge, Attitude and Practices) Study on Child Labor and Working Conditions in Artisanal Small Scale Gold Mining

Psychosocial Support and Children's Rights Resource Center
Authors
Arnie C. Trinidad
Elma P. Laguna

Field Researchers
Ma. Ima Carmela Ariate
Sucelle Deacosta
Maria Judy San Juan

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Executive Summary

Artisanal Small-Scale Gold Mining (ASGM) has been around in the country from the pre-Hispanic era. It has remained largely informal relying heavily on manual labor using simple implements and methods. Operations are carried out by miner families or by small investors. However, over the years, some operations have grown as funding is made available by financiers enabling miners to use explosives and heavy equipment.

The informal nature of ASGM has led to numerous problems such as land grabbing, landownership and claimant problems, exploitation of labor, child labor, environmental degradation, and other problems that have resulted from the fact that ASGM has remained unregulated by the government for a long time.

The Pre-Knowledge Attitude and Practices (KAP) Study on Child Labor and Working Conditions in Artisanal Small Scale Gold Mining is part of a bigger project of the International Labour Organization called the Caring Gold Mining Project funded by the US Department of Labor.

The pre-KAP study aims to:

1. Provide evidence of the project's contribution to improve the knowledge, attitudes, and practices of the target groups with regards to child labor and working conditions in ASGM
2. Measure the level of knowledge, attitude and practices of national and local governments, policy makers, workers, and employees' organization, media, miners, civil society organizations and mining communities.
3. Provide data that will be useful for the development of context appropriate awareness raising and advocacy activities.

The research used survey and qualitative methods to gather necessary data from the areas of T'boli, South Cotabato and Labo and Paracale, Camarines Norte.

Although the study met its aims, it has encountered some unavoidable limitations:

- Instead of stratified random sampling which would have resulted to a more precise and representative sample, cluster sampling was used. Challenges and limitations related to obtaining a copy of a list of households in the surveyed barangays that can serve as a sampling frame became the major considerations in using cluster sampling over stratified random sampling.
- While the survey of child laborers would have been ideal to get a statistical understanding of the phenomenon in ASGM, the inconspicuousness of child laborers given that child labor is illegal and hidden by the community, and the lack of reliable figures on the actual numbers of child laborers has stopped the researchers from undertaking a statistical research on child laborers. Thus, the researchers had to resort to focus group discussions with children that the barangays helped the team identify. Thus, results on the child labor portion of the research cannot be considered generalizable to the experiences of child laborers in ASGM. Instead, they should be regarded as representing the experiences of a segment of child laborers in the communities included in the research.

Summary of Survey Findings

Demographic Information

- A total 388 of household heads were surveyed for this research from select barangays in T'boli, South Cotabato and Labo and Paracale, Camarines Norte. Majority of the respondents come from T'boli, South Cotabato (45.9%). More than half of the respondents are women. Four in 10 respondents report an average monthly income of less than PhP5,000 (USD98.45 at PhP50.79=USD1).
- Half of all the respondents have worked in the mines. Of these repondents 54.2% are still currently involved in ASGM. Men are usually relegated to heavy labor such as digging tunnels, hauling gravel, and operation of ball mills. Women and children usually perform tasks such as panning, pounding of ore, processing gold using mercury, etc.

Work Conditions

- An overwhelming majority of the respondents worked without contracts. In Camarines Norte, none of the workers signed a contract. This is largely because of the informal nature of ASGM where families and financiers are the primary movers of ASGM work. Wages and benefits are dependent on informal arrangements; and work hours and days do not conform to labor standards. In fact, majority of the respondents (95.3%) said that while their work hours last from 10 to 16 hours, none of them received overtime pay.
- Miners who receive regular wages earn an average monthly income of PhP5,950 (44%), which means they live below the poverty line. Non-mining households earn an average of PhP3,465 or USD68.02. Thus, many miners still prefer to work in ASGM despite the dangers they face in the mines.
- Majority of the miners are exposed to health hazards in their work such as being soaked in water and mud (69.3%); exposure to extreme heat and cold (65.6%) and exposure to dust (46.9%) and fumes (40.6%). This is exacerbated by the lack of protective behaviors in the mines especially in Camarines Norte. In T'boli, South Cotabato, there is more widespread use of protective gear as the mining associations require workers to wear safety gear in T'boli. The most common safety gears are helmets and face masks.

Social Safety Nets

- Seven out of 10 respondents have Philheath, the health insurance program of government, which pays for a portion of the patient's inpatient and outpatient bills. Half of those who are enrolled in Philhealth have used this for their medical needs. On the other hand, only three in 10 are enrolled in the Social Security System (SSS) and one in 10 are enrolled in Pag-ibig, which is primarily aimed to provide shelter financing for Filipinos.

Mercury Use

- Five in 10 respondents report have used mercury to process gold. Of these numbers, 53.8% said they held mercury in the last 12 months. There is a lower number of respondents in South Cotabato (10.1%) than Camarines Norte (92.2%).
- Mercury is wrongfully disposed of in waterways and the soil, even if a significant number of respondents know that groundwater, bodies of wáter, and fishes can be affected by mercury waste. There is also no sense of responsibility over and ownership of the

responsibility for the disposal of mercury. Majority (46.4%) believe that financiers should carry this responsibility, the miners' association, and the government.

- There is little awareness on how to protect oneself from mercury.
- There is lack of drive to find alternative means of separting gold from ore and enforcing the Minamata Convention to eventually phase out the use of mercury in the country. There is also the problem on the part of the Department of Environment and Natural Resources (DENR) and the Local Government Unit (LGU) in monitoring and stopping mercury use in ASGM.

Health Seeking Behaviors

- Medical expenses of those who have sought medical treatment have largely resulted to out of pocket expenses. While a significant number of respondents have Philhealth, Philhealth only covers a percentage of inpatient and outpatient bills of patients.
- While sick, respondents' household was able to sustain itself through the spouse's work (52.5%), children's work (21.2%), borrowing money from neighbors and relatives (15.3%).

Access to Social Protection Mechanisms

- Only 30.9% of the respondents are enrolled in the Department of Social Welfare and Development's (DSWD) conditional cash transfer program. In the absence of direct help from the government, families rely on loans to sustain their family's needs, education of children, medical needs of family members and construction/repair of houses. Almost seven in 10 respondents borrowed money over the last two years from local credit unions and and NGOs (51%), relatives (30%), and neighbors (18%).
- More women (57%) took out a loan compared to men (43%).

Child Labor Issues

- Thirty eight percent (38%) of respondents admit that children below 18 years old work in the mines despite child labor laws. There are fewer respondents who reported incidences of child labor In South Cotabato, which could be because an ordinance had been passed banning children from working in the mines.
- Children start being initiated into the work when parents bring their children along to the mines. Children as young as seven years old are brought to the mines where they help with lighter tasks such as running errands or hammering ore for gold processing. Based on the survey, the mean age of children in the mines is 13.5 years old as older children can already help in substantial tasks in ASGM.
- The most common tasks assigned to children are gold panning (60.1%) and hauling (46.6%) and processing (35.1%) of ores.
- There is no set time as to the work of children. Often, the work hours of children are the same as adults. Most of those who work long hours are no longer in school. However, for those who remain in school and still choose to work, they work on weekends or after school on a part time basis.
- In the survey, respondents said children receive the same amount of payment as adults.
- Some are forced to mine as in the case of Malaya, Labo, Camarines Norte because there was no high school in the (village) barangay.
- Child labor persists because the practice is passed on from one generation to another.

Formalization of the Industry

- Officially, there are only five existing Minihang Bayans (People Small Scale Mining Area) from Luzon to Mindanao. T'boli South Cotabato has already complied with the requirements and awaiting for the confirmation from the DENR. The potential of mining associations and the Minahang Bayan to help in organizing the industry, enforcing labor and safety standards, controlling child labor, arresting pollution can already be seen in T'boli especially if the mining associations are trained and empowered to organize ASGM better.
- Labo and Paracale, Camarines Norte are only starting to apply for mining permit. Thus, the miners still largely remain unorganized.
- Many miners are not aware of the benefits of ASGM communities being declared as Minahang Bayan, especially the benefits that will redound to their welfare as workers
- The small scale mining law explicitly states that the authority to manage ASGM was vested on Provincial/City Mining Regulatory Boards (PMRB), composed of representatives from the Department of Environment and Natural Resources (usually the Regional Executive Director of the Mines and Geosciences Bureau that is under the auspices of the DENR) who will serve as the Chairman of the Board, appointed representatives from the office of the Governor or City/Municipal Mayor, small-scale miners, large scale miners, environmental non-government organizations (NGOs). Labor concerns are not explicitly taken up in the Regulatory Board since neither the regional offices of the Department of Labor and Employment (DOLE) nor the Public Employment Service Office (PESO) are represented in the Regulatory Board. However, the presence of the DOLE or the PESO serves as an unfortunate omission since labor standards and concerns such as the safety and health of workers are among the things demanded from Minahang Bayan applicants.

Summary of Recommendations

Fast-tracking the Minahang Bayan Application and Empowering the Minahang Bayan

- A stronger lobby should be waged for the DENR to fast track the approval of the Minahang Bayan application of Paracale and Labo, Camarines Norte as this has negative consequences on the livelihood of miners as well as the community. The DENR should also be pressed to fast track the release of the result of the application of T'boli for the Minahang Bayan status. The formalization of ASGM in these areas will pave the way for better labor and safety practices. Mining ventures can be monitored by mining associations for labor standards, incidences of child labor, and mercury usage, etc as the mining associations become answerable to the LGU, PMRB, MGB, and the DENR.
- The support of the community for the Minahang Bayan should harnessed. People's lack of understanding of the benefits of the Minahang Bayan or the indifferent or antagonistic attitude towards should be addressed to ensure better support from the community.

Curbing the Use of Mercury

- Knowledge on the ill effects of mercury to the health and the environment does not necessarily translate to protective behaviors. While knowledge campaigns are good to increase awareness, this will not work if other important variables are not set in place.

For example, campaigns against the proper disposal of mercury will only work if the communities are provided detailed protocols and training and if technologies are provided. They should also be provided with better protective gear to safeguard them from mercury exposure.

- The reach of the information campaigns on mercury use and the harmfulness of mercury should be expanded to include the whole community because the community's health at large is also at risk with the rampant use of mercury in mining

Improving Safety Practices in ASGM

- Safety training should be required by mining associations before miners are hired. Training modules can be developed that will be delivered by mining associations to miners
- Community members should be included in advocacy work in improving conditions in mining. They have a stake in improving mining practices in the community because 1) many of them have relatives in mining, 2) they are affected by the ups and downs of the mining business in their community, and 3) they are affected by the environmental impact of mining.

Collaborative Approach to Improving ASGM Conditions

- The success of monitoring the ASGM industry rests on the collaboration among different national government agencies and local government units. Because LGUs are the ones who have the reach in the community, they should be mobilized to assist in monitoring and enforcing small scale mining laws in the communities. The success of this is largely hinged on the awareness and commitment of the Local Chief Executive (LCE) to small scale mining issues because only when he adopts this as a program can there be better monitoring and implementation of labor and child labor laws in ASGM communities
- Lobbying should also be made for the expansión of the membership of the Regulatory Boards to include representatives from DOLE so that labor standards and concerns such as the safety and health of workers in ASGM can be addressed.

Stopping Child Labor

- The anti-child labor campaign should target cultural practices of communities and should tap Filipino values of care and protection for children. When cultural practices are tapped, there are more chances of people changing their stance towards making their children work in ASGM. Messages promoting the importance of education over the temporary gains of work should also be sent to enable children to realize the importance of education over work at their age
- Barangay (village) volunteers should also be organized to help in monitoring child labor in communities. A local referral system should be established involving social workers, schools, NGOs, and other key stakeholders to ensure that children found to be working in ASGM will be referred to proper agencies for help

A. Introduction

Artisanal small-scale mining is defined by law as operating using "artisanal methods" (e.g. cast or shallow underground mining), relies on "manual labor," does not utilize "sophisticated mining equipment" (i.e. excavators, loaders, backhoes, bulldozers, drilling machines and/or related or similar equipment for the extraction and/or breakage of materials[1]), and generates not more than "50,000 metric tons of ore" [2] a year. However, the equipment used in small scale mining has differentiated over the years that now range from "basic panning activities" to more advanced methods using hydraulics and tunneling operations and with "artisanal mining persisting alongside more mechanized "medium-scale operations."[3] There are companies with small-scale mining permits that use heavy equipment such as small-scale miners in Camarines Norte who admitted to using explosives and heavy equipment in their operations.[4]

Despite this, artisanal small-scale gold mining (ASGM) is still regarded as small, which is really a symptom of how little control government has over the industry.

With the gradual involvement of a heterogeneous group of financiers, what started out with rudimentary artisanal mining activities has gradually evolved into a sector characterized by (1) rising degrees of heterogeneity, with (2) a growing differentiation between a class of ASM-entrepreneurs and a massive workforce; and (3) a multi-tiered division of labor and complex arrangements for the distribution of risks and benefits across the sector's diverse participants (Verbrugge, 2015a).

While gold mining has existed in the Philippines for centuries, it was only in the latter part of the Marcos Administration that the government attempted to officially support the development of artisanal small scale gold mining (ASGM).[5]

The recognition of ASGM by the government was a response to the worldwide gold crisis that led to the closure of 14 large and medium scale mining corporations in the country.[6] The collapse of

[1] Verbrugge, Boris. 2016. "Formalizing Artisanal and Small-Scale Mining: Whither the Workforce?" Resources Policy. 47(3);134-141. Available html https://www.researchgate.net/publication/292949678_Formalizing_artisanal_and_small-scale_mining_Whither_the_workforce.

[2] Marcos, Ferdinand Edralin. 1984. "Presidential Decree No. 1899: Establishing Small Scale Mining as a New Dimension in Mineral Development."

[3] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." *Journal of Rural Studies.* 47:108-116 · August 2016

[4] Cabuenas, Jan Viktor. 2016. "Lopez stops all small-scale mining operations outside Minahang Bayan." *GMA News.* 9 August. Available html http://www.gmanetwork.com/news/story/576867/money/economy/lopez-stops-all-small-scale-mining-operations-outside-minahang-bayan

[5] Philippine Rural Reconstruction Movement. No Date. "Historical Sketch of the Mining Industry." Available html http://www.prrm.org/publications/gmo2/historical.htm

[6] Philippine Rural Reconstruction Movement. No Date. "Historical Sketch of the Mining Industry." Available html http://www.prrm.org/publications/gmo2/historical.htm

the large scale mining industry in the country was precipitated by the global plunge of gold prices (from a high of $1,000/troy oz in the late 1970s to $284/troy oz by 1985),[7] increases in the prices of oil and fuel, and the high costs of maintaining large-scale mining operations.[8]

As "political and economic upheavals" raged from 1980s to the 1990s, a lot of Filipinos especially in rural communities were pushed into grinding poverty.[9] Rural communities were beset by scarce economic opportunities and uneven socioeconomic structures brought on by the landed elite's monopoly of ownership of agricultural lands, problems in agricultural production affected by environmental disasters, unstable markets, and absence of farm to market roads; and armed conflict.[10] ASGM became a viable source of livelihood for a number of rural communities from the north to the south. According to European scholar Boris Verbrugge who did his PhD on small scale mining in the Philippines, rural poverty served as a "key factor underlying the expansion" of small-scale gold mining.[11] ASGM became an alternative means not only to earn for the subsistence needs of the poor, but in some cases enabled them to achieve upward social mobility for those who struck it big in the mines.[12]

The release of PD 1899 of 1984 was government's initial attempt to regulate small-scale mining operations through the issuance of mining licenses and permits and to serve as a strategy to increase employment in rural communities and generate additional foreign exchange earnings.

Thirty years after the Presidential Decree was released, small-scale mining is anything but small. Artisanal small scale gold mining (ASGM) gold production has grown exponentially over the years. In fact, ASGM provides "as much as 80% of the Philippines' annual gold production" and "directly employs around half a million people and indirectly benefits two million people in remote rural communities."[13] Mining expert Deogracias Contreras, in fact, describes the small scale mining industry as a "hidden and huge money-making activity rationalized and justified by employing the populist term 'small and poor' to hide the true nature of the silent business from northern,

[7] Philippine Rural Reconstruction Movement. No Date. "State of the Mining Industry." Available html http://www.prrm.org/publications/gmo2/state.htm.
[8] Presidential Decree 1899, circa 1984. Establishing small-scale mining as a new dimension in mineral development. Available html http://www.gov.ph/1984/01/23/presidential-decree-no-1899-s-1984/
[9] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. 47:108-116 • August 2016
[10] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August.47:108-116.
[11] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August. 47:108-116.
[12] Ibid.
[13] Ban Toxics. 2017. "BAN Toxics, ILO call for an end to Child Labor in Small Scale Mining." 12 January. Available html http://news.pia.gov.ph/article/view/1141483794826/ban-toxics-ilo-call-for-an-end-to-child-labor-in-small-scale-mining.

southern and Mindanao regions of the Philippines."[14] The epithet "small" stuck because it still employs relatively cheaper operations that relies "heavily on manual labor using simple implements and methods" and involves small time mining cooperatives or associations.[15] In contrast, large-scale mining operations involve "the mobilization of substantial capital, heavy equipment, high technology and a much bigger workforce."[16] However, Verbrugge describes the situation in ASGM as having "heterogeneous" where some mining communities already use explosives and heavy equipment that run counter to the definition of small-scale mining.[17]

Because of the informal nature of the industry and its now complex and unwieldy structure, ASGM has spawned numerous problems such as land grabbing, landownership and claimant problems, lack of access to credit,[18] labor exploitation including poor working conditions, child labor, and environmental degradation, among others.

1. *Objectives of the Study*

The Pre- KAP Study is part of the CARING-Gold Mining Project of ILO and Ban Toxics, which will mobilize stakeholders to address the issues of child labor and poor working conditions in ASGM in the municipalities of Labo and Paracale, Camarines Norte and T'boli, South Cotabato. The Project aims to:

a. Enhance laws, policies, and action plans to address child labor (CL) and working conditions (WC) in ASGM and ensure their enforcement and/or implementation;
b. Improve access of vulnerable households living in ASGM communities to relevant social protection and livelihood programs; and
c. Develop and implement mechanisms to increase monitoring of child labor and working conditions in gold mining supply chains, particularly ASGM.

[14] Gamboa, Rey. 2017. "A Reader's View of Small Scale Mining." Discussion of a letter from reader, Deo Contreras. 21 March. Available html http://www.philstar.com/business/2017/03/21/1682996/readers-view-small-scale-mining.
[15] Philippine Rural Reconstruction Movement. No Date. Brief Definition of Basic Mining Terms. Available html http://www.prrm.org/publications/gmo2/annex1.htm.
[16] Philippine Rural Reconstruction Movement. No Date. Brief Definition of Basic Mining Terms. Available html http://www.prrm.org/publications/gmo2/annex1.htm.
[17] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August.47:108-116.
[18] In an article in the Business Mirror "Demand for microfinance loans continues to expand in Philippines, BSP says," published on 22 May 2015, only 3.7M low income Filipinos have accessed microfinance credit from rural and thrift banks and NGOs. The available loan portfolios are not enough to respond to the demand. The United Nations Industrial Development Organization also published in October 2017 a Rapid Assessment of Gold and Financial Flows Linked to Artisanal Small Scale Gold Mining entitled "Follow the Money: The Philippines." In the research, it was mentioned that the informality of the industry renders it difficult for miners to have access to legitimate forms of credit.

The pre-KAP study will be conducted prior to the implementation of the intervention and advocacy programs in the three beneficiary municipalities. The Study has the following objectives:

a. Provide evidence of the project's contribution to improve the knowledge, attitudes, and practices of the target groups with regards to child labor and working conditions in ASGM
b. Measure the level of knowledge, attitude and practices of national and local governments, policy makers, workers, and employees' organization, media, miners, civil society organizations and mining communities.
c. Provide data that will be useful for the development of context appropriate awareness raising and advocacy activities.

2. Data Collection Instruments

The KAP Project will use a mix of quantitative and qualitative methodologies:

a. Review of Related Literature

A review of primary and secondary sources on child labor and working conditions in Artisanal Small Scale Gold Mining (ASGM) was carried out.

b. Survey

Sampling Methods. Structured survey questionnaires were administered to household heads in the three mining communities (Please see Table 1 for municipalities and barangays included in the research project). Household heads were chosen as the chief respondents of the survey because major decisions are usually made by them in most Filipino families. As chief decision makers, they are the main breadwinners of the family; they exercise control and influence over household affairs including the decision to enroll or participate in community social welfare programs, they are the ones who are contacted by government and non-government organizations for possible enrollment in community programs and they are also potentially aware of goings on in the community. The questions were designed to enable ILO to conduct a post-KAP Survey to measure changes in the KAP of the respondents at the end of the CARING Gold Project.

The survey employed cluster sampling where the population was divided into clusters of households. Under each cluster are 10 households.

Using this method, mining and non-mining households had an equal chance of being selected as respondents to reflect the proportion of mining and non-mining households in these communities.

At 95% confidence level and with a margin of error of 5%, 369 households will be sampled for the study. The total household population of the selected barangays is 8,336. If the total

population is 10,000 or greater, a sample size of 384 is required to get a 95% confidence interval and a 5% margin of error. But since the total household population is less than 10,000, the formula used for the computation of the sample size is based on the following:

$$n_f = \frac{n}{1+n/N}$$

where n_f is the desired sample size when N<10,000
n is the sample size when N > or equal to 10,000
N is the total population size

Thus, the total number of households to be surveyed was adjusted to 369 households. However, an additional of 5% was added to the sample to account for possible attrition rate (loss to follow-up, the household moved, etc). This brings the total sample to 387.

The number of households to be surveyed per barangay is proportionately distributed according to the population size (See Table 2).

*Table 1. Computation of Number of Households to be Surveyed**

Barangay	Population	Household Population	Household Proportion	Household Proportion Cluster/ Clusters to be surveyed	Households to be surveyed
Paracale, Camarines Norte					
Casalugna	987	197	0.02367929	1	9
Gamaus	3,313	663	0.07948275	3	29
Tawig	3,505	701	0.08408906	3	31
Tugos	5,288	1,058	0.12686531	5	47
	13,093	**2,619**		**12**	**116**
Labo, Camarines Norte					
Dalas	4,519	904	0.1084161	4	40
Masalong	2,661	532	0.06384051	2	24
Malaya	1,273	255	0.03054076	1	11
	8,453	**1,691**		**8**	**75**
T'boli, South Cotabato					
Edwards	3,407	681	0.08173792	3	30
Kematu	6,782	1,356	0.16270812	6	60
Desawo	1,799	360	0.04316012	2	16
Poblacion	8,148	1,630	0.19548006	7	72
	20,136	**4,027**		**18**	**178**
Total	**41,682**	**8,336**	**1**	**37**	**369**

*Population based on 2010 Census of Population and Housing[19]

[19] Philippine Statistics Authority. 2010. Census of Population and Housing. Available html https://psa.gov.ph/sites/default/files/attachments/hsd/pressrelease/Bicol.pdf

Field supervisors determined the different clusters of households that were covered in the survey. They randomly selected the cluster from which the team will start the data collection. In each cluster, the first household was randomly selected. The survey team then continued to the next household until the required number of households was completed. If the cluster did not yield the required number of sample households, the team moved to the next cluster.

Local enumerators who have the knowledge of the community and know the local language/dialect were employed to conduct the interviews and record the responses.

c. Interviews and Focus Group Discussions

To gain a better understanding of the subject of the research, interviews and focus group discussions were held with various subjects to tease out issues that the quantitative data will not be able to capture. Interviews and FGDs were conducted with National Government Officials from the Department of Environment and Natural Resources (DENR), Mines and Geosciences Bureau (MGB), Department of Labor and Employment (DOLE), etc., employer's association, a worker's group, LGU officials such as local chief executives, barangay officials, etc., miners, miners' association members, and children were conducted.

3. Limitations of the Study

Although the study met its aims, it has encountered some unavoidable limitations:

a. Instead of stratified random sampling which would have resulted to a more precise and representative sample, cluster sampling was used. Challenges and limitations related to budgetary and timeframe constraints and difficulties in obtaining a copy of a list of households in the surveyed barangays that can serve as a sampling frame became the major considerations in using cluster sampling over stratified random sampling.
b. While the survey of child laborers would have been ideal to get a statistical understanding of the phenomenon in ASGM, time and budgetary constraints, the inconspicuousness of child laborers given that child labor is illegal and hidden by the community, and the lack of reliable figures on the actual numbers of child laborers has stopped the researchers from undertaking a statistical research on child laborers. Thus, the researchers had to resort to focus group discussions with children that the barangays helped the team identify. Thus, results on the child labor portion of the research cannot be considered generalizable to the experiences of child laborers in ASGM. Instead, they should be regarded as representing the experiences of a segment of child laborers in the communities included in the research.

B. Review of Related Literature

1. Attempts at Regulating ASGM

Realizing the potential of small scale mining to earn needed revenues for the country and its negative impact on the environment, the Corazon Aquino government tried to strengthen the

regulation of ASGM. If the provincial government had blanket authority over mining in the communities as the Governor had the unilateral authority to approve and grant small scale mining permits to ASM operators based on PD 1899,[20] Republic Act No. 7076, which was passed in June 1991, systematized, rationalized, and created a stricter environment for the "small scale development and utilization of mineral resources" in order to address the "social, economic, technical, and environmental problems connected with small-scale mining activities."[21] The Law created a Regulatory Board to oversee ASGM, placing more "stringent requirements for ASM-operators" and enabling the National Government to have a say in the establishment and monitoring of ASGM in gold rush mining communities as well as taxing its operations.

With the passage of RA 7076, the authority to manage ASGM was vested on Provincial/City Mining Regulatory Boards (PMRB), composed of representatives from the Department of Environment and Natural Resources (usually the Regional Executive Director of the Mines and Geosciences Bureau that is under the auspices of the DENR) who will serve as the Chairman of the Board. The Regional Director serves as the National Government's link to mining in the local communities. Other members of the PMRB include appointed representatives from the office of the Governor or City/Municipal Mayor, small-scale miners, large scale miners, environmental non-government organizations (NGOs), and staff support from the Mines and Geosciences Bureau that serves as the Board's Technical Secretariat.[22] In 2009, the DENR Provincial Environment and Natural Resources Officer (PENRO) was added as a member of the PMRB.[23]

In 2012, then President Benigno S. Aquino III released Executive Order No. 79 in order to strengthen the regulation of the mining industry, including small scale mining. The EO directs all small-scale mining operations to be undertaken only within declared Small-Scale Mining Areas or Minahang Bayan and calls for the training and capacity building measures in the form of technical assistance for small-scale mining cooperatives and associations shall be conducted by the concerned government agencies.

One of the stipulations of EO No. 79 was the creation of PMRBs in all provinces where these have not yet been constituted. The Regulatory Board was granted the authority to designate 'people's small-scale mining areas'" or Minahang Bayan,[24] which serves as the centralized program for

[20] Alave, Kristine L. 2011. "Government to Clip LGUs' Power to Grant Mining Permits." *Philippine Daily Inquirer.* 26 August. Available html http://newsinfo.inquirer.net/47899/gov%E2%80%99t-to-clip-lgus%E2%80%99-power-to-grant-mining-permits
[21] Republic Act No. 7076. People's Small-scale Mining Act of 1991.
[22] Department of Environment and Natural Resources (DENR) Administrative Order No. 34. "Rules and Regulations to Implement Republic Act No. 7076 Otherwise Known as 'Peoples Small Scale Mining Act of 1991'"
[23] PMRB Journal. No Date. Powerpoint Presentation. Available html http://denr-mgb1.org/pdf/PMRB%20Journal.pdf
[24] Verbrugge, Boris. 2016. "Formalizing Artisanal and Small-Scale Mining: Whither the Workforce?" *Resources Policy.* 47(3);134-141. Available html https://www.researchgate.net/publication/292949678_Formalizing_artisanal_and_small-scale_mining_Whither_the_workforce.

processing of minerals within a specific area. Unfortunately, labor concerns are not explicitly taken up in the Regulatory Board since neither the regional offices of the DOLE nor the Public Employment Service Office (PESO) are represented in the Regulatory Board. However, the presence of the DOLE or the PESO serves as an unfortunate omission since labor standards and concerns such as the safety and health of workers are among the things demanded from Minahang Bayan applicants.

To establish the Minahang Bayan, small scale miners must be organized into cooperatives that have the technical capability and financial resources to observe structural and taxation requirements of the concession area.[25] Applications are made with the Provincial/City Mining Regulatory Board;[26] however, the Environment Secretary has the final say in the approval of the concession.

In effect, the Law and its accompanying IRR diffused the authority to include the DENR and other key stakeholders in the community. Through the MGB Regional Director the DENR exerts "direct supervision and control over the program and activities of the small-scale miners within the people's small-scale mining area."[27] However, with the composition of the PMRB, community stakeholders share the authority in overseeing small scale mining with the National Government. This is reflective of the stipulations of RA 7160 or the Local Government Code that devolved among others the supervision of small scale mining to LGUs.[28] Thus, it can be said that there is co-management of the small-scale mining industry between the DENR/MGB and the LGU as "LGUs have the duty and authority to protect and co-manage the environment and enhance the right of the people to a balanced ecology" and to benefit economically from mining in their localities[29] but subject to the policies, standards and guidelines of the DENR.

By law, the PCMRB has been vested considerable power over ASGM. For instance, it has the authority to demand the following from contractors who have been awarded mining rights:[30]

- Compliance with mining plan approved by the PMRB

[25] Valencia, Czeriza. 2015. "DENR now Accepting Minahang Bayan Applications." 13 April. *Philippine Star.* Available html http://www.philstar.com/business/2015/04/13/1443067/denr-now-accepting-minahang-bayan-applications.

[26] Department of Environment and Natural Resources. 2015. Administrative Order 2015-03. "Revised Implementing Rules and Regulations of Republic Act No. 7076, otherwise known as the 'People's Small-Scale Mining Act of 1991.'" Available html http://www.mgb.gov.ph/images/stories/DAO2015-03.pdf.

[27] Department of Environment and Natural Resources (DENR) Administrative Order No. 34. "Rules and Regulations to Implement Republic Act No. 7076 Otherwise Known as 'Peoples Small Scale Mining Act of 1991'"

[28] Republic Act 7160. Local Government Code of the Philippines

[29] Aquino, Benigno III S. 2012. Executive Order No. 79. Institutionalizing and implementing reforms in the philippine mining sector providing policies and guidelines to ensure environmental protection and responsible mining in the utilization of mineral resources. 6 July.

[30] Department of Environment and Natural Resources (DENR) Administrative Order No. 34. "Rules and Regulations to Implement Republic Act No. 7076 Otherwise Known as 'Peoples Small Scale Mining Act of 1991'"

- Observance of safety rules and regulations promulgated by the DENR
- Payment of fees, taxes, royalties or government production share as provided by the law
- Compliance with pertinent rules and regulations on environmental protection and conservation, particularly those on tree cutting, mineral processing and pollution control such the protection of the surrounding environment of small scale mining areas and proper disposal of tailings and wastes
- Assumption responsibility for the safety of persons working in the mines.
- Provision of facilities that will ensure the safety and health of small scale miners (i.e. sanitation facilities, safe drinking water)
- Compliance to DENR regulations related to the use of mercury, cyanide or any other poisonous substance
- Notification the Board of all accidents causing either death or lost working time.
- Compliance with all environmental laws, especially with respect to water quality, water course diversion, excess siltation and undue interference with existing agricultural fishing or other legitimate land and water usage

The EO also paved the way for the creation of the Mining Industry Coordinating Council (MICC), co-chaired by the Department of Finance (DoF) and the DENR and whose members include the Secretary of the Department of Justice (DOJ), Chairperson of the National Commission on Indigenous Peoples (NCIP), and the President of the Union of Local Authorities of the Philippines (ULAP), which counts as its tasks the following:

a. Ensure continuing dialogue and coordination among all stakeholders in the industry;
b. Conduct and facilitate the necessary capacity and institutional building programs for all concerned government agencies and instrumentalities;
c. Conduct an assessment and review of all mining-related laws, rules and regulations, issuances, and agreements with the view to formulating recommendations to improve the allocation of revenues and risk between the government and the mining sector, to enhance coordination between the National Government and LGUs to ensure implementation of mining laws and regulations, and to properly regulate small-scale mining participants and ensure that they are accountable to the same environmental and social obligations as large-scale mining companies;
d. As may be directed by the President, constitute and create a Task Force Against Illegal Mining and seek the assistance of all law enforcement agencies to ensure strict compliance with relevant laws, rules and regulations;
e. Serve as the Oversight Committee over the operations of Provincial/City Mining Regulatory Boards (P/CMRBs);

2. Challenges in the implementation of the Small-Scale Mining Laws

While stringent laws have been set in place to regulate ASGM, the problem lies with the ineffective or lack of implementation of mining laws by the government because of its limited capacity to enforce laws. Added to this are "operational inefficiencies, preventable environmental and social costs and the illegal operation of most mining sites.[31] In this section, we discuss some of the snags that have been encountered in the implementation of laws relevant to small scale mining:

a. ASGM Operations Outside the Minahang Bayan

According to a *Philippine Star* article, small scale mining can be found in 40 mineral-rich provinces nationwide, majority of which can be found outside the Minahang Bayan.[32] Currently, there are five legally operating Minahang Bayans: Banaybanay, Davao Oriental; Lorente, Eastern Samar; Buenavista, Quezon; Dinagat Island; and Agusan del Sur.[33] Out of the 8,281 small-scale mining operations engaged in gold, other metallics and non-metallics, it is estimated that only 16% are considered legal.[34] The operations outside the Minahang Bayan is a clear defiance of EO 79 and RA 7076 but is also symptomatic of how weak government is in the implementation of its laws. Since these mines are operating illegally, they remain effectively unregulated by the government. Furthermore, Llaguno et al point out that its promulgation has not had significant effect on "the portion of the sector that operates legally" with economic, environmental, health, and safety issues still persisting to this day.[35]

In August 2016, the new DENR Secretary Regina Paz Lopez ordered the stop of small scale mining operations, emphasizing that all "small-scale mining activities operating outside the *Minahang Bayan* were illegal in nature."[36] The decision is based on E0 79 but also the Department's drive to "protect and conserve the environment, and promote sustainable development based on

[31] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." *Philippine Engineering Journal.* Vol. 37, No. 1: 45-62

[32] Simeon, Louise Maureen. 2016. "Government Halts Operations of Small-Scale Miners." *Philippine Star.* 9 August. Available html http://www.philstar.com/business/2016/08/09/1611391/government-halts-operations-small-scale-miners.

[33] Mayuga, Jonathan L. 2017. "Lopez not keen on approving new Minahang Bayan sites this year." Business Mirror. 8 January. Available html http://www.businessmirror.com.ph/lopez-not-keen-on-approving-new-minahang-bayan-sites-this-year/

[34] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[35] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." *Philippine Engineering Journal.* Vol. 37, No. 1: 45-62

[36] Mayuga, Jonathan L. 2017. "Lopez not keen on approving new Minahang Bayan sites this year." Business Mirror. 8 January. Available html http://www.businessmirror.com.ph/lopez-not-keen-on-approving-new-minahang-bayan-sites-this-year/

ecologically sound economic activities—such as agri-forestry and ecotourism."[37] However, it is not clear whether the edict has been honored by the ASGM communities because as Verbrugge points out, many States, the Philippines included, are weak in terms of exercising control over mining sites because local state actors hold more sway in these communities.[38] In Benguet province, a well-known and well-established mining community has never established a Minahang Bayan despite the passage of RA No 7076, which indicates the community's clear defiance of national laws. [39]

Complicating matters is the fact that unregulated mines are often located in "unruly uplands" (Scott 2009 in Verbrugge), "where armed actors like soldiers, paramilitaries, police, and communist rebels of the New People's Army (NPA) maintain a foothold in the mining economy."[40] Aside from these armed groups, SSM areas are also "controlled by middle-men who finance…[ASGM] activities"[41] and who with weak government control, rake in the profit from the gold mining venture.

Various studies worldwide show that a combination of "a range of fiscal-administrative barriers, rent-seeking behavior on the part of government officials, low literacy rates, the remoteness of government offices, … prevents them from actually… (e.g. Hentschel et al., 2002; Van Bockstael, 2014) succeeding in regulating the industry.[42] For instance, there is limited government capacity to enforce existing legislation that is further complicated by the transient and mobile nature of ASGM, which moves from location to location depending on the amount gold the area yields.[43]

Moreover, ASGM-operators "have limited incentives to comply with existing legislation because the state is unable to offer them anything in return, including basic mineral tenure security." To begin with, the "challenging application requirements and process are adding more to their lack of drive to obtain permit to legally operate."[44]

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[37] Simeon, Louise Maureen. 2016. "Government Halts Operations of Small-Scale Miners." Philippine Star. 9 August. Available html http://www.philstar.com/business/2016/08/09/1611391/government-halts-operations-small-scale-miners.

[38] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August.47:108-116.

[39] Gamboa, Rey. 2017. "A Reader's View of Small-Scale Mining." Letter from Deogracias Contreras. *Philippine Star.* 21 March. Available html http://www.philstar.com/business/2017/03/21/1682996/readers-view-small-scale-mining

[40] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August. 47:108-116.

[41] Gamboa, Rey. 2017. "A Reader's View of Small-Scale Mining." Letter from Deogracias Contreras. Philippine Star. 21 March. Available html http://www.philstar.com/business/2017/03/21/1682996/readers-view-small-scale-mining

[42] Verbrugge, Boris. 2016. "Voices from Below: Artisanal and Small-Scale Mining as a Product and Catalyst of Rural Transformation." Journal of Rural Studies. August. 47:108-116.

[43] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.

[44] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

However, according to the study of Llaguno et al, "subsequent surveys, interviews and workshops in Kalinga, Abra and Camarines Norte, miners, local government executives and other stakeholders maintain that legalization and regulation are two of the most important needs of the small-scale mining industry in its journey towards sustainability."[45] The problem on the formalization and regulation of the ASGM industry is rooted in the "lengthy, resource-intensive and sometimes politicized permitting/licensing application process."[46] For instance, the declaration of an area as a Minahang Bayan goes through a circuitous and lengthy process that goes through the review of authorities at the regional (Regional Director and the Chairman of the PMRB) and the national level (e.g. DENR Secretary). The process has had a very dismal track record in processing MB applications: according to existing record "no application has been processed within 3.5 months (the prescribed application period); instead, records indicate that existing applications have been pending for about 3-25 years."[47] The glacial pace of processing papers has had real implications on the mines on different levels--government, environment, communities, individuals, and children—affecting all these groups negatively in one way or another.

b. The Smuggling of Gold

Mining Consultant Deogracias Contreras disclosed in a letter to a *Philippine Star* columnist that the exigent stipulations of RA No. 7076 and its accompanying Implementing Rules and Regulations (DENR Administrative Order 2015-03) has actually resulted to small scale mining activities going underground and the foregoing of reporting to the government. With this "No gold produce was sold over the counter to the Central Bank by small-scale miners unlike before, and the mineral products were simply smuggled out of the country apparently undetected by the government authorities" to Southeast Asia and Hong Kong. [48]

Ironically, the *Minahang Bayan* is the government's attempt to legalize and regulate small scale mining to stanch the illegal sale of gold to the foreign market, enable the government to establish control in small scale mining sites, earn revenue via the imposition of taxes, and to enforce

[45] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[46] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[47] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[48] Gamboa, Rey. 2017. "A Reader's View of Small-Scale Mining." Letter from Deogracias Contreras. Philippine Star. 21 March. Available html http://www.philstar.com/business/2017/03/21/1682996/readers-view-small-scale-mining

stricter environmental controls and health standards for the workers.[49] However, problems with enforcement of laws have not stopped the illegal trade of gold from ASGM.

Since 2013, it has been found that there is an increasing aggressive involvement of Chinese firms in small scale mining activities.[50] Reports that questionable Chinese mining investors have entered the country and entered into illegal deals with ASGM miners that are onerous to the Philippine Government. There are reports that "Chinese mining firms operate under the cover of domestic small scale miners to bypass Philippine mining laws and protocols, as well as to avoid the large capital requirements, fees, and taxes associated with large-scale mining."[51] Through collusion with small scale miners, Chinese firms fund small scale mining permits for a minimal fee. The ore and the gold they are able to get from ASGM communities are then smuggled to Hong Kong or China, which accounts for declines in the report of metallic mineral production value.[52] A report by Florida Jurado[53] appears to support this claim:

> Available data from the Mines and Geosciences Bureau show that total gold production from 2005 to 2014 averaged 30,733 kgs annually of which 19,908 kgs or 63 percent came from small scale mining and 10,825 kgs or 37 percent from large-scale mining. However, gold production from small scale mining decreased by 38 percent for 28,556 kgs in 2010 to 17,639 kgs in 2011 and significantly dropped to 1,090 kgs or by 94% in 2012. It further declined to 589 kgs or by 46% in 2013, although it slightly grew to 633 kgs or 7% in 2014.

There has also been a 98 percent drop in the amount of gold sold from small scale mining to the Central Bank of the Philippines according to former MGB Director Leo Jasareno. Jasareno who surmises that gold was "likely being sold illegally on the black market or smuggled out of the country.'"[54]

[49] Department of Environment and Natural Resources. 2015. Administrative Order 2015-03. "Revised Implementing Rules and Regulations of Republic Act No. 7076, otherwise known as the 'People's Small-Scale Mining Act of 1991.'" Available html http://www.mgb.gov.ph/images/stories/DAO2015-03.pdf.

[50] Romulo, Roberto. 2016. "Small scale mining: Immeasurable Damage." Philippine Star. 22 July. Available html http://www.philstar.com/business/2016/07/22/1605232/small-scale-mining-immeasurable-damage

[51] Romulo, Roberto. 2016. "Small scale mining: Immeasurable Damage." *Philippine Star.* 22 July. Available html http://www.philstar.com/business/2016/07/22/1605232/small-scale-mining-immeasurable-damage

[52] Romulo, Roberto. 2016. "Small scale mining: Immeasurable Damage." Philippine Star. 22 July. Available html http://www.philstar.com/business/2016/07/22/1605232/small-scale-mining-immeasurable-damage

[53] Jurado, Florida J. 2015. "Philippine Small Scale Mining Tax Issues and Concerns." NRTC Tax Research Journal. Nov to Dec. 27:6

[54] Romulo, Roberto. 2016. "Small scale mining: Immeasurable Damage." Philippine Star. 22 July. Available html http://www.philstar.com/business/2016/07/22/1605232/small-scale-mining-immeasurable-damage

3. Working Conditions

Because ASGM communities remain largely informal and unregulated, mine operators see no obligation to conform to safety standards set by the law. Working conditions in the mines are often unsafe and risk-filled, which means they are "dirty, difficult, and dangerous" as ILO defines hazardous work.[55] However, it must also be pointed out that even in situations where ASGM operations have the requisite licenses to operate in government-authorized Minahang Bayan, the employees are denied of "formal-legal recognition and protection."[56]

Work at ASGM often involves backbreaking labor that flouts internationally accepted labor standards. Verbrugge[57] provides readers a vivid description of the work entailed in ASGM:

> At the lower tiers of production regimes in the sector are unskilled day laborers like ore haulers (atraseros), ore packers and processing plant workers, who often receive small and fixed or piece-rate (e.g. per bag of ores) wages, lack long-term income security, are often underage, and are exposed to various working hazards (e.g. exposure to toxic chemicals, tunnel collapse). The actual diggers (abanteros) are organized into corpos headed by a team leader, often an experienced miner responsible for overseeing the mining operations. Corpo members receive a percentage share of the net revenues (i.e. the revenues remaining after the financier has deducted the operational expenses), paid either in cash (money sharing) or in kind (graba/ore sharing). The remainder of the revenues accrues to the financier(s), who often retain(s) a forty to sixty percent share. Included in the operational expenses are not only the wages of unskilled day labor, costs for ore processing, and the costs of inputs like gasoline and digging tools, but sometimes also the relatively higher wages of (semi) skilled labor like carpenters, explosives experts, technicians, portal guards, and in some cases even chemists and engineers.

The work can best be described as exploitative with those in the upper tiers of the work hierarchy (i.e. financiers) benefitting most from the hard work of those in the lower tiers of production.

In the absence of formal safety nets (e.g. insurance, health benefits, and access to loans) in ASGM, miners rely on financiers to provide them with funds in the face of emergencies and family needs. In the Philippines, financiers provide not only the subsistence needs of miners, but also provide them cash advances or "utang" that enable workers to tide over their needs until the

[55] International Labour Organisation. No Date. Hazardous Work. Available html http://www.ilo.org/safework/areasofwork/hazardous-work/lang--en/index.htm

[56] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.

[57] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.

next payday.[58] This could come in either in the form of cash or in kind, such as a motorcycle or a "*sinemana,"* a systematic weekly allowance provided by the financier to his/her abanteros, which typically ranges between PHP 1,000 and PHP 1,500 (US$ 20-30). In both cases, costs are deducted from the worker's share as part of the operational expenses."[59]

But this is not to say that the cash advances act as real social safety nets because these are "later deducted from the worker's share as part of the operational expenses" anyway. While the arrangement provides benefits to the workers, it is still entrenched in exploitation and unequal social relations because "provisions for food and shelter are often provided from the financier's own store, or that of one of his friends or family members."[60] Thus, the money that the workers get is plowed back into the coffers of the financier or his cohorts. Breman[61] also describes such arrangements as a form of "debt of bondage," which enables the financier to have a hold over the miners. Because the workers are "given" their basic needs by their financiers, there is an unwritten obligation to reciprocate this with loyalty. Financiers benefit from such an arrangement as the sense of obligation from workers they "help," allow them to have access to a reliably supply of labor. Sometimes, the financier retains up to 70 per cent of the net revenues, i.e. those revenues remaining after the operational costs have been deducted.[62]

The exploitative nature of ASGM can be regarded as built-in into the system. ASGM operators often intend to maintain the informal nature of the industry to escape strict stipulations of the various national laws, implementing rules and regulations, and department orders. One of the Department Orders that ASGM operators have evaded is DENR Administrative Order 1997-30,[63] which sets rigorous safety and environmental regulations, which when enforced will disqualify most of the operating small scale mining operations in the country.[64] Moreover, the government can only impose and determine the effectiveness of these rules and regulations in registered mining sites. As it is, the registration of mining sites with government remain dismal. Thus, miners

[58] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" *Resources Policy.* 47 (3): 134-141. March.
[59] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" *Resources Policy.* 47 (3): 134-141. March.
[60] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" *Resources Policy*. 47 (3): 134-141. March.
[61] Breman, Jan. 1999. "Industrial Labour in Post-Colonial India II : Employment in the Informal-Sector Economy." *International Review of Social History.* 44(3), 451–483.
[62] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.
[63] Department of Environment and Natural Resources. Administrative Order 1997-30. Small-scale Mine Safety Rules and Regulations. Available html http://www.mgb10.com/policies/ADMINISTRATIVE%20ORDERS/DAO%201997-30.pdf.
[64] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.

cannot take advantage of other services and assistance that the government may offer to promote responsible and more efficient mining (e.g.,centralized assay facilities, trainings, etc.)[65]

On the flip-side of the coin, "various fiscal-administrative and political impediments prevent ASM-operators from entering the formal economy, including high permit costs, rent-seeking, nepotism and patronage."[66]

4. Work Hazards

ASGM usually entails heavy and precarious manual labor as rocks, soil and other debris are moved manually and the gold separated from the ore using "rudimentary or unsafe mining and mineral processing techniques."[67]In the absence of occupational safety standards and sophisticated mining equipment, workers face numerous work hazards in ASGM that predisposes them to disease and injuries that can reduce their productivity and income for dependents.

The article by Smith et al. lists down some of the possible effects of grueling physical labor to the health of miners: ergonomic stresses, muskoloskeletal disorders and diseases, respiratory diseases, hearing loss, parasitic infections, infectious diseases such as tuberculosis and skin infections, fractures, and other similar effects on the body.[68] There is also the problem of silicosis and mesothelioma that are brought on by exposure to dust.[69]

Moreover, miners also face physical hazards such as landslides; decompression sickness from diving; unstable underground structures; rock falls; poorly built tunnels; airborne pollutants (equipment exhaust and dust); flooding; heat and cold stress; poor air quality/ventilation; blasting/explosives; stumbling, slipping and falling; gender based violence and abuse; poor sanitation; improper use of chemicals; and dense living arrangements.

Miners are also exposed to different naturally occurring chemicals and work-related chemicals used to separate the gold from the ore such as: mercury, cyanide, and zinc. On the other hand, naturally occurring ones include: arsenic, chromium, radon, aluminum, lead, methane, and

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[65] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[66] Verbrugge, Boris. 2016. "Formalizing artisanal and small-scale mining: Whither the workforce?" Resources Policy. 47 (3): 134-141. March.

[67] Smith, Nicole, Saleem Ali, Carmel Bofinger, and Nina Collins. 2016. "Human health and safety in artisanal and small-scale mining: an integrated approach to risk mitigation." Journal of Cleaner Production. 129: 43-52.

[68] Smith, Nicole, Saleem Ali, Carmel Bofinger, and Nina Collins. 2016. "Human health and safety in artisanal and small-scale mining: an integrated approach to risk mitigation." Journal of Cleaner Production. 129: 43-52.

[69] Viega, Marcelo and Henrique Morais. 2015. "Backgrounder: Artisanal and Small–Scale Mining (ASM) in Developing Countries." Canadian International Resources and Development Institute. British Columbia. Available html http://cirdi.ca/wp-content/uploads/2015/04/CIRDI-ASM-Backgrounder_2015Apr10.pdf.

others.[70] Exposure to these chemicals causes illnesses, some of which are irreversible. This is exacerbated by the fact that health facilities are often not available in ASGM communities because these communities are located in far-flung areas, away from city or municipal centers where health facilities are usually available.

Miners and their families are also exposed to increased risks of HIV/AIDS and other sexually transmitted diseases as brothels and drug use are common in mining communities.[71]

5. Health and Environmental Impact of the use of Mercury

That ASGM provides livelihood and income to the communities is unquestionable; however, this comes at a great cost. In the previous section, the different types of illnesses that beleaguer miners have been discussed. Among the most serious illnesses are caused by the use of mercury in ASGM affecting not only individuals, but community health as well.
In many small scale gold mining communities, workers use mercury to extract gold from the ores. Mercury attracts gold and allows it to separate from other soil, minerals, or rocks. Once the gold particles attach themselves to the mercury, the amalgam of gold and mercury are heated, which causes the mercury to evaporate leaving the gold behind.[72]

Mercury in ASGM communities are used in two ways: 1) The first method involves panning where soil containing gold particles are swirled in a round pan after which mercury is added to attract gold. The amalgam is separated with a blowtorch, which makes the mercury evaporate as a poisonous gas. 2) Then second method is "whole ore amalgamation" that uses large amounts of mercury dumped directly into ball mills filled with the whole (unconcentrated) ore, and mixed in the running ball mill for a period of time. After this, the mercury-gold amalgam is retrieved and burned over a fire to obtain the gold.[73]

Most of the child laborers interviewed by Human Rights Watch were working with mercury. The youngest child interviewed who burned the mercury-gold amalgam was 9 years old.[50]The children usually obtained the mercury from local traders. They mixed it into the ore with their bare hands and often also burned the amalgam, with nothing to protect them from the toxic

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[70] Smith, Nicole, Saleem Ali, Carmel Bofinger, and Nina Collins. 201 6. "Human health and safety in artisanal and small-scale mining: an integrated approach to risk mitigation." Journal of Cleaner Production. 129: 43-52.
[71] Ballard, Chris and Glenn Banks. 2003. "Resource Wars: The Anthropology of Mining." *Annual Review of Anthropology.* 32: 287-313.
[72] Dozolme, Philippe. 2016. "Why is Mercury used in Gold Mining and Why is it a Problem?" *The Balance.* 21 November. Available html https://www.thebalance.com/gold-mining-mercury-usage-2367340.
[73] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

fumes. Human Rights Watch observed children burning the amalgam in various settings, including indoors and inside homes, where young children and pregnant women were being exposed to the fumes.

The burning of mercury produces gas and mine tailings that could lead to serious health and environmental issues:[74]

> High level and prolonged exposure to gaseous mercury [even in small amounts] can affect the lungs, brain, kidneys, and immune system of people. It can cause varying symptoms such as tremors, emotional changes, insomnia, neuromuscular disorders such as weakness, muscle atrophy or twitching, headaches, nerve problems, and mental function issues. This is especially dangerous to pregnant women and children.[75] Higher exposures may also cause kidney and respiratory failure and death.

Most vulnerable to this are miners who are directly handling the mercury. As the mercury evaporates, the workers and people nearby including their families could inhale this that could lead to serious health complications. Most vulnerable are pregnant women, fetuses, and children. Fetuses exposed to mercury usually experience developmental delays such as cognitive impairment (mild mental retardation).[76]

Fumes could also be swept by winds that could affect people in surrounding communities. According to the US Environmental Protection Agency, fumes could "rise into the atmosphere where it could circulate for three months before raining again."[77]

But the most serious effect is when mine tailings settle into the surrounding environment, seeping into the ground and contaminating water supply. Once mercury settles in bodies of water, microorganisms act on it and change in into methylmercury,[78] which is concerned one of the most toxic forms of mercury. This could be ingested by fish and shellfish, which remain in their bodies and passed on when the seafood is consumed by human beings. .

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[74] Romulo, Roberto. 2016. "Small Scale Mining: Immeasurable Damage." Mines and Geosciences Bureau, Department of Environment and Natural Resources. 22 July. Available html http://www.mgb.gov.ph/2015-05-13-02-02-11/news-articles/380-small-scale-mining-immeasurable-damage

[75] US Environmental Protection Agency. No Date. Health Effects of Exposures to Mercury. Available html https://www.epa.gov/mercury/health-effects-exposures-mercury

[76] World Health Organization. 2017. Mercury and Health. WHO Fact Sheet. Available html http://www.who.int/mediacentre/factsheets/fs361/en/

[77] US Environmental Protection Agency. No Date. Health Effects of Exposures to Mercury. Available html https://www.epa.gov/mercury/health-effects-exposures-mercury

[78] US Environmental Protection Agency. No Date. "How People are Exposed to Mercury." Available html https://www.epa.gov/mercury/how-people-are-exposed-mercury

Despite the serious impact of the use of mercury on people and the environment, unscrupulous financiers and miners still use mercury because it is the "easiest and most cost effective solution for gold separation."[79] It is estimated that ASGM mines in the country discharge approximately 70 tons of mercury into the environment each year.[80]

All of these happen because of the absence of a formal small scale mining sector. According to Llaguno et al,[81] "the environment…stands to reap the benefits of regulation as the miners can…request assistance from the government on the trainings and environmentally-friendly technologies on gold processing – something that only the minority legally-registered small-scale mining operations now are able to avail of."

One of the environment friendly technologies developed by the Department of Science and Technology (DOST) and the University of the Philippines Diliman Department of Mining, Metallurgical, and Materials Engineering is a "green mining technology" that allows the extraction of gold and copper without the use of toxic chemicals like mercury and cyanide. The technology uses the "enhanced gravity concentration-flotation-extraction" process and uses an integrated tailings disposal and treatment system. This method assures that waste materials that are disposed in the environment are safe and considered as non-pollutant."[82]

6. Child Labor in ASGM

In this section, we discuss child labor, which is one of the most serious lapses in the enforcement of laws in the Philippines as it involves children who are most vulnerable to exploitation given their age and the developmental stage they are in.

According to ILO,[83] the "term "child labour" is often defined as work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development." It refers to work that:

- is mentally, physically, socially or morally dangerous and harmful to children; and

[79] Dozolme, Philippe. 2016. "Why is Mercury Used in Gold Mining and Why it is a Problem." *The Balance.* 21 November. Available html https://www.thebalance.com/gold-mining-mercury-usage-2367340.

[80] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

[81] Llaguno, Erickson, Virgina J Soriano, and Mili-Ann M. Tamayao. 2016. "Improving the Minahang Bayan Declaration Process: A First Step Towards Achieving Sustainability in Philippine Small-Scale Gold Mining Industry." Philippine Engineering Journal. Vol. 37, No. 1: 45-62

[82] Department of Science and Technology Media Service. 2016. "Green Mining Technologywill Help 300,000 Small-Scale Miners, Says Dost Chief." DOST. 28 March. Available html http://www.dost.gov.ph/knowledge-resources/news/45-2016-news/956-green-mining-technologywill-help-300-000-small-scale-miners-says-dost-chief.

[83] ILO. No Date. "What is Child Labour?" Available html http://ilo.org/ipec/facts/lang--en/index.htm.

- interferes with their schooling by depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work.
- In its most extreme forms, child labor involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities – often at a very early age.

As early as 2003, the country passed RA No. 9231 or the "Act Providing for the Elimination of the Worst Forms of Child Labor and Affording Stronger Protection for the Working Child" and Republic Act 7658 or "An Act Prohibiting the Employment of Children Below 15 Years of Age in Public and Private Undertakings." The law provides special protection to children from all forms of abuse, neglect, cruelty, exploitation and discrimination, and other conditions prejudicial to their development including child labor and its worst forms." Moreover, it also provides sanctions for their commission and carries out a program for prevention and deterrence of and crisis intervention in situations of child abuse, exploitation and discrimination." The law stipulates that children below 15 years old are not allowed to work except when they work for their family, the employment does not endanger the child's safety, health and morals, nor impairs his/her normal development.

Despite the proviso banning children under 15 from working and children under 18 from working in hazardous conditions, it was found that 14 percent of children who live in mining areas work in mining, majority of who are between the ages of 11 and 17. There are also younger children working in the mines and exposed to hazardous conditions. [84] The ILO estimated in 2009 that over 18,000 girls and boys work in mining in the Philippines.[85]

According to the group's report, the government barely monitors child labor in mining nor does it penalize employers or withdraw children from these dangerous work environments. While there are also laws and programs that extend education (RA No. 10533 Enhanced Basic Education Act) and social support for children and their families in the mines, the government has been terribly remiss in delivering such services to child laborers in the mines. The lack of education and social safety nets for children are contributing to their being indentured to poverty for life. These children work in:[86]

[84] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

[85] ILO. 2009. ""Girls in Gold Mining: 'I don't want my Children to be Like Me.'" Available html http://www.ilo.org/global/about-the-ilo/newsroom/features/WCMS_107949/lang--en/index.htm

[86] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

- Underwater Mining, which involves the practice of compressor mining along the shore, in rivers, and in swampy areas. Miners dive underwater supported by air from a tube attached to a diesel-run air compressor at the surface. This is extremely dangerous both carried out by adult men and sometimes boys.
- Mining in Underground Pits, where adult and young miners work in dry underground pits that are up to 25 meters deep. The miners work in the pits for several hours in suffocating and sometimes oxygen deprived conditions. In Labo, Camarines Norte, a 17 year old boy and his 31 year old brother died of asphyxiationin September 2014 as reported by the Human Rights Watch
- Carrying Heavy Loads, including very young children, carry substantial loads of rocks, soil, or ore in underground and above ground mines.
- Processing Gold with Mercury, normally done by children, including many girls, as young as nine years old. Unknown to many of these children, mercury is especially harmful to children like them since their organs are still developing. This puts them at more risk with health issues and illnesses. In the neighboring communities of Mt. Diwalwal in Compostela Valley, school children (who do not work in the mines) have been found to have high concentrations of mercury in their system. Because the labor structure in ASGM are informal and traditional in nature, majority of workers perform their tasks without proper training in handling equipment and the use of protective gear such as masks, gloves, and goggles that will offer them minimum protection from being exposed to mercury for long periods of time.[87] Scientific studies[88] have shown that prenatal exposure to mercury has resulted to lower IQ scores, poor performance in school including memory, attention, language and spatial recognition. This has also been found to be true in school age children who have been exposed to mercury due to their body weight and development stage they are in.

However, there are also other implications of working in mines for children. As children are mixed with adults in the mines, they are exposed to adult activities that may not be appropriate for their age[89] such as gambling, alcoholism, and prostitution. Sometimes, children are not just exposed to the reality of prostitution; instead, they themselves become victims of prostitution in the mines, which predisposes them to teenage pregnancy, violence, and sexually transmitted

[87] Caymo, Apolinario II. 2016. Analysis of the Child Labour Issue in Small-Scale Mining Operations in the Philippines. LLM Paper. Universiteit Gent, Faculty of Law. http://lib.ugent.be/fulltxt/RUG01/002/272/391/RUG01-002272391_2016_0001_AC.pdf

[88] Bose-O'Reilly, Stephan, Kathleen M. McCarty, Nadine Steckling, and Beate Lettmeier. 2010. "Mercury Exposure and Children's Health." *Current Problems Pediatric Adolescent Health Care.* Sep; 40(8): 186–215. Available html https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3096006/.

[89] Caymo, Apolinario II. 2016. Analysis of the Child Labour Issue in Small-Scale Mining Operations in the Philippines. LLM Paper. Universiteit Gent, Faculty of Law. http://lib.ugent.be/fulltxt/RUG01/002/272/391/RUG01-002272391_2016_0001_AC.pdf

diseases. The communities could also be "breeding ground for crime"[90] and drugs which could compromise the moral fabric of children. According to the UNICEF, "increase in social pathologies such as alcoholism, drug use and crime" could lead to children engaging in criminal activities and addicted to drugs and alcohol. [91]

Moreover, working in the small-scale mines leave the children with little or no opportunity to get formal education or to get back to school. This compromises children's future in such a way that they are robbed of the opportunity to escape the poverty trap they are in. With their work in the mines while trying to balance school, children may find themselves too tired to attend classes which forces them to drop out at some point. Often times, school is also far away from their work since schools, especially high schools are usually found in the city centers away from the mining communities.

Living and working in the mines also makes children vulnerable to being victims of conflict in the mine as "existing tensions over access to economic opportunities and natural resources" (e.g. land and water) are common in mining communities.[92] Conflict could lead to the recruitment of children by armed groups; disruption of schooling; and the rendering of children as orphans.

The Benigno Aquino Government launched the Pantawid Pamilyang Pilipino Program (4Ps) as part of its centerpiece social service program for the poor. The conditional cash transfer program of the DSWD reaches approximately, "4 million households from the poorest of the poor, who are often forced to involve their children in work to augment the family income."[93] 4Ps aim to put children to school by making the education of children as a requisite of the conditional cash transfer. However, the DSWD recognized that putting children to school will not necessarily solve the problem of child labor. With this, the DSWD under the Duterte Government added a new module to the Family Development Sessions "to raise awareness on child labor and the role of the family to prevent or to end child labor, especially its worst forms."[94] Taguiwalo said the module will explain to the 4Ps beneficiaries the negative effects of child labor on children and their families and teach them how to combat it in their own homes and communities.

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[90] Viega, Marcelo and Henrique Morais. 2015. "Backgrounder: Artisanal and Small–Scale Mining (ASM) in Developing Countries." Canadian International Resources and Development Institute. British Columbia. Available html http://cirdi.ca/wp-content/uploads/2015/04/CIRDI-ASM-Backgrounder_2015Apr10.pdf.

[91] UNICEF. 2015. *Children's Rights and the Mining Sector: UNICEF Extractive Pilot.* Geneva: UNICEF. Available html https://www.unicef.org/csr/files/UNICEF_REPORT_ON_CHILD_RIGHTS_AND_THE_MINING_SECTOR_APRIL_27.pdf

[92] UNICEF. 2015. *Children's Rights and the Mining Sector: UNICEF Extractive Pilot.* Geneva: UNICEF. Available html https://www.unicef.org/csr/files/UNICEF_REPORT_ON_CHILD_RIGHTS_AND_THE_MINING_SECTOR_APRIL_27.pdf

[93] UNICEF. 2015. Children's Rights and the Mining Sector: UNICEF Extractive Pilot. Geneva: UNICEF. Available html https://www.unicef.org/csr/files/UNICEF_REPORT_ON_CHILD_RIGHTS_AND_THE_MINING_SECTOR_APRIL_27.pdf

[94] Junio, Leilani S. 2017. "Social welfare dept creates module on child labor for 4Ps beneficiaries." *Philippine Daily Inquirer.* 12 January. Available html http://www.canadianinquirer.net/2017/01/12/social-welfare-dept-creates-module-on-child-labor-for-4ps-beneficiaries/

The reports of children working in the mines are symptomatic of government's failure to properly respond to the needs of children. The lack of government response is blamed on the insufficient number of staff and technical capacity, but also to the lack of political will by national and local officials to take measures that will not be well-received by the local population in impoverished areas, or by mine owners and traders that rely on child labor.[95] There is also lack of coordination among government bodies that will send a strong message to ASGM communities of the illegality of hiring children in the mines. For instance, the Bangko Sentral ng Pilipinas (BSP) and international gold trading and refining companies do not have monitoring mechanisms to check whether their source of gold is child-labor-free. [96]

C. Background Information on Respondents

The research covered a total of 388 respondents, almost half came from T'Boli, South Cotabato (45.9%). Two municipalities in Camarines Norte were also surveyed, the towns of Paracale and Labo. Table 1 below shows the distribution of respondents by municipality.

Table 2. Distribution of respondents by study area

	Frequencies	Percentage
Labo, Cam. Norte	81	20.9
Paracale, Cam. Norte	129	33.2
T'boli, So. Cotabato	178	45.9
N	388	

Table 2 presents basic background information of respondents. A little more than half of them are women (55.7%), majority are married (61.9%). In terms of educational attainment, results of the survey show low level of education among most of the respondents. Four in 10 reported that they either have elementary level of education of have graduated from elementary school. An almost similar percentage of the respondents has reached high school.

The average age of respondents is 43 years old.

[95] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

[96] Human Rights Watch. 2015. "What…if something Went Wrong?" Hazardous Child Labor in Small Scale Gold Mining in the Philippines. 29 September. Available html https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

Table 3. Basic background information of respondents

	Frequencies	Percentage
Sex		
Male	172	44.3
Female	216	55.7
N	388	
Marital status		
Single	15	3.9
Married	240	61.9
Cohabiting/Live-in	95	24.5
Separated	19	4.9
Widow/Widower	19	4.9
N	388	
Educational attainment		
Elementary	164	42.3
High School	171	44.1
Vocational	14	9.5
College	37	3.6
Did not attend school	2	0.5
N	388	
Age		
30 and below	82	21.1
31 – 40	90	23.2
41 – 51	102	26.3
51 and over	114	29.4
N	388	
Mean age (sd)	43.1 (13.4)	

1. *Socioeconomic Status of Respondents*

An overwhelming majority of respondents (81.4%) comes from households that can be considered economically disadvantaged. Four (4) in 10 reported an average monthly income lower than Php5,000. (USD98.45 at PhP50.79=USD1). A similar proportion has a household monthly income between Php5,000 to Php11,999 (USD236.26).

Table 4. Monthly Household Income

	Frequencies	Percentage
Lower than Php5,000	156	41.1
Php5,000 – 11,999	153	40.3
Php11,800 – 14,999	14	3.7
Php15,000-20,000	14	3.7
More than 20,000	20	2.6
Amount varies every month	33	8.7
N	380	

2. *Residential history*

Four in 10 respondents have lived in the barangay all their lives, while 6 out of 10 respondents can be considered in-migrants, majority of whom have been living in the barangay for more than 5 years. When asked why they moved to their current residence (barangay), the most common

responses are the desire to work in the mines and because they married someone from the barangay. Other reasons include calamity, their previous house was demolished, the family lives in the barangay, it is closer to the school of their children, they were able to buy properties in the barangay, etc.

Table 5. Length of stay in current barangay

	Frequencies	Percentage
Since birth	152	39.2
Less than one year	4	1.0
1-2 years	8	2.1
3-5 years	21	5.4
More than 5 years	203	52.3
N	388	

Table 5.a. Reasons for moving to the barangay (multiple response)

	Frequencies	Percentage
To work in the mines	68	29.1
Married someone from the barangay	71	30.3
Husband/partner works in the mines	8	3.4
To look for gold	3	1.3
To look for work other than mining	18	7.7
Was invited by a friend	6	2.6
Personal reason	27	11.5
Others	54	23.1

When asked if they still have plans to move to other places, 9.3 percent answered in the affirmative, the reason being to look for a job other than being a miner. Majority, on the other hand, said that they intend to stay in the barangay where they are currently residing.

3. Experience and exposure to mining work

Close to half of all the respondents have worked in the mines (49.7%). Of these respondents, 54.2% are still currently involved in ASGM. They are employed as “abantero” or those who directly work in tunnels such as digging; “atrasero” or those tasked to haul off gravel or pack stones dug from tunnels on the side of hills/mountains or above ground holes; ball mill/back hoe operators; and those in-charge of separating gold from the ore using mercury. Some respondents are also involved in office work or in providing administrative support, while others mentioned specific tasks involved in the different modes of gold mining such as panning, pounding of ore, hauling, checking the compressor, cooking of gold, etc. Women are usually relegated to specific tasks such as gold panning, separating gold from ore using mercury, and manually breaking ore.

Two in three of the total number of respondents have relatives who have worked or are currently working in ASGM. This means that most respondents come from mining families and therefore have familiarity over the issues faced by miners in ASGM. Almost half (45.1%) of them still have relatives currently working in ASGM. Those who are not involved in mining are engaged in various livelihood activities such as farming, fishing, small business, office work and factory work.

Table 6. Respondent's relationship to relatives who have worked/are working in ASGM (multiple response)

	Frequencies	Percentage
Parents	23	9.0
Parents-in law	11	4.3
Siblings	114	44.5
Grandparents	2	0.8
Aunts/Uncles	42	16.4
Cousins	116	45.3
Others	96	37.5
N	256	

4. Exiting from ASGM

On the other hand, those who are no longer in the mines stopped for the following reasons: they got sick (17%), they find mining activities difficult (15.9%), other opportunities came (9%), or the mining venture that failed to find gold (9.1%). Among those who mentioned health reason for stopping from their mining work, they reported medical conditions such as asthma, lung problems, diabetes, hernia, etc.

A big proportion of respondents mentioned reasons that were not in the original choices, and these include change in management of ASGM, wife is against mining work, financier was not able to pay them, they moved to another barangay, mining is not as profitable as it used to be, wife went abroad, they went back to school, they got married and had children, they have to take care of their children and there was also the fear of being apprehended.

During the times that they were out of work in ASGM, 19.3% said they didn't have other livelihood activities. Twenty percent relied on farming, 17.5% on small businesses. Other sources of income include construction work, trucking, driving tricycle, among others.

Table 7. Main reason for stopping mining work

	Frequencies	Percentage
Got sick	15	17.0
Mining is difficult	14	15.9
Mining was unsuccessful, was not able to get gold	8	9.1
Other opportunities came		
Just waiting for next mining project	8	9.1
Salary is not enough	1	1.1
Others	1	1.1
N	41	46.6
	88	

At present, these respondents are mostly involved in low income livelihood activities such as farming and small businesses such as sari-sari or variety stores. However, a significant number of respondents (20%) said that they are currently unemployed since their last employment contract in the mines. These people have no sources of income that could aggravate their socioeconomic condition further.

When asked if they still wish to work in the mines again, more than half (59.1%) of those who stopped mining said they have no intention at all of going back to mining. Only a third of those who are no longer working in the mines expressed the desire to work as miners in the future while 10 percent are still undecided. This is because they also wish to earn money and they believe that working in the mines give them fast and easy access to income.

On the other hand, concern for their health and the difficulty situation in the mine were cited as common reasons

D. Work Issues Faced by ASGM Miners

In this section, we look at outstanding issues faced by ASGM miners at work.

1. Contract

Majority of the miners work without contracts (95%). Only 2.6% said they signed a contract with their last work at ASGM. In Camarines Norte, none of the respondents signed a contract. However, a very small 5.1% of the respondents from South Cotabato said they signed a contract, while 94.5% said they did not sign a contract. The absence of contracts is a function of the informal nature of ASGM work. Because many miners work for financiers, their work will only last for as long as the financier has money to shell out or for when there is a significant gold haul that will enable the financier to continue funding the mining venture.

Employment agreement via contracts is important because it lays down the terms and conditions governing wages, benefits, termination procedures, covenants not to compete, and the duties and responsibilities of employer and employee. This ensures the mutual protection of employers and employees. However, due to the informal nature of the employment in ASGM, employment is based on verbal agreements between the miner and the employer. Sixty five (65%) percent of responders said their work is based on a verbal agreement between them and the financier, while 26% answered in the negative because their family owns the mining venture or they do freelance work wherein they pick rocks or ore from people they know.

2. Work Hours and Days

FGD respondents from Brgy. Gumaus, Paracale described work as hard labor as it requires extraordinary physical exertion. Work hours are also long. Survey respondents share they work from 10 to 16 hours a day, sometimes starting at 4 am and ending late in the afternoon. In some cases, work could last up to the wee hours of the morning for those who start working in the afternoon. A few have reported working for almost 24 hours in some instances; however, these workers also work in shifts.

While work hours exceeded normal working hours, majority (95.3%) said they do not get extra pay for the hours they worked beyond 8-hour hours, which violates the Labor Code stipulation that any work beyond (8) hours a day entails an additional compensation equivalent to the regular wage plus at least twenty-five percent (25%) of the regular wage.

The absence of this necessary benefit stems from the fact that ASGM miners work in a largely informal setting. Some 59% of the respondents said they were employed by individual financers. This is followed by 12.2% stating their own family finances the mining activities. A similar percentage answered "others" that includes self-financed ventures, foreign investors financing the ASGM activities, or there are no financers because the miners dig or pan the gold on their own or they rely on the graces of other miners who give them left over soil, sand, or ore where they can still extract gold ("nakikikulipaw").

Table 8. Who finances the mines they are working on?

	Frequencies	Percentage
Own family	23	12.2
Corporation or a group of miners	12	6.4
Individual financier	111	59.0
Association of miners	2	1.1
No one	17	9.0
Others	23	12.2
N	188	

The rootedness of ASGM in the community's history has kept mining in the study areas as an informal industry. Many employment practices from the past have been merely reproduced in the present, which includes keeping operations informal characterized by "lack of protection in the event of non-payment of wages, compulsory overtime or extra shifts, lay-offs without notice or compensation, unsafe working conditions and the absence of social benefits such as pensions, sick pay and health insurance."[97] Moreover, the informal nature of the industry where miners deal with private financiers makes miners accept the current available work arrangements as normal and adequate.

A member of the barangay council in Paracale said, "yan pong kabod na yan ay nakagisnan na namin yan, yan po ay dating trabaho ng mga ninuno namin kumbaga, simula nung araw pa" ("we grew up in mining, our forebears have worked as miners for the longest time"). The President of the Mining Association in Barangay Tugos shares "So hindi namin alam na kami palang mga magkakabod ay ilegal kasi iyon yung naging kumbaga hanap buhay na minana namin sa aming mga ninuno, simula pa po sa panahon ng kastila talagang marami ng nagkakabod na hindi naman sinasabing ilegal." (We never knew that small scale mining was illegal because this has been an industry that we inherited from our forebears. Mining has been in existence from the time of the Spaniards and it was never considered illegal). Thus, little effort was invested to organize the industry or to conform to labor laws and standards. Given this, LGUs never intervened in ASGM operations until recently, when the law compelled LGUs to stop ASGM operations in areas that have not been declared by the Government as Minahang Bayan, a strategy used by the government to formalize the mining operations of ASGM communities and for government to exercise greater control in these operations.

[97] ILO. No Date. Informal Economy. http://www.ilo.org/global/topics/employment-promotion/informal-economy/lang--en/index.htm

However, the case is different in South Cotabato. In South Cotabato, miners have formed mining associations, which gave ASGM a certain degree of formalization. These mining associations have also submitted applications to the MGB as Minahang Bayan

Out of 192 respondents who ever worked in ASGM, only five (5) said they signed a contract in their last employment. An overwhelming majority also reported that they did not have a contract the last time they worked in the mines (97.4%). Of those who said they signed a contract, the length varied. Among those who have worked in the mines, half reported that they worked continuously, while another half only had intermittent work. About 20% mentioned others such as working for less than a one month or that depending on the financier, the availability of funds to continue work, location, or on the earnings they get from ASGM.

Without a contract, 67.4% of respondents said that their work in the mines is based solely on what they have agreed with the financier.

Table 9. No. of working months

	Frequencies	Percentage
1-3 months	28	15.1
4-6 months	9	4.8
6-12 months	20	10.8
Continuous	93	50.0
Others	36	19.4
N	186	

When asked why work in the mines have not been continuous, a third mentioned they or the financier ran out of capital, followed by their health condition (17.5%), or that they looked for other areas to mine (14%), or they opted to work in the farm (10.5%). Thus, we see that

Table 10. Reasons for the irregular work in the mines (multiple response)

	Frequencies	Percentage
Ran out of capital	19	33.3
Opted to work in the farm	6	10.5
Looked for other areas to mine	8	14.0
Have saved enough money	2	3.5
Got sick	10	17.5
N	57	

When it comes to number of working days, a third among those who have mining experience said that they work more than 5 days a week (6 days 24% and 7 days 22%).

Table 11. No. of working days in a week

	Frequencies	Percentage
1 day	2	1.1
2 days	9	4.8
3 days	21	11.2
4 days	13	6.9
5 days	41	21.8
6 days	57	30.3
7 days	45	23.9
N	188	

3. Wage and Benefits

Because of the informal nature of ASGM, there are no regular wages and benefits for many. For instance, 44% of respondents with mining work experience shared that they received payment (salary) when they were working in the mines.

A significant number of respondents (41.5%) mentioned other forms of arrangement, mostly, having a share in the earnings when the group of miners gets a significant gold find, which means, in most instances, their income will depend on the amount of their gold haul. The income of small scale miners is often based on production sharing such that out of 120 bags of ore extracted, 10 bags will go to the landowner, another 10 bags to the permit holder, while the remaining 100 bags will be divided as follows: 60% goes to the operations management while the remaining 40% will be divided among abanteros and other workers. On the other hand, for those who work on their own, they receive no salary but instead, get all the earnings, if there are, from their mining activity.

But gold haul is not significant all the time for ASGM miners. A local government official from T'boli notes that the discovery of gold in small scale mining is often hinged on luck or fortune, rather than the efficient and methodical exploration of gold deposits. In his estimation, some 90% of small scale mining ventures fail to yield profits or go bankrupt because of this. In such instances, the lowly miners work for months on end up with little or no income at all in the end. Still the lure of mining remains. A barangay captain in T'boli explains, "Halimbawa, ako ang may tunnel. Pupunta ang abantero sa akin. Wala namang sahod na ma-charge. Kung makabangga ng high grade na mina, siempre, high grade din ang income nila." ("For instance, I own a tunnel. The abantero will approach me. He will not have a regular salary. But if we discover a high grade mine, the returns will also be substantial.") Thus, the lure of mining has to do with the potential payoff later on. They may have low returns for months or years, but when they finally find a significant gold deposit, miners could hit it big. Miners usually look up to financiers or fellow miners who have become rich after stumbling upon a big haul of gold.

With this, it does not come as a surprise that on average, miners estimated a monthly income of Php5,950 or USD116.80 (s.d. 5,694). Seven percent (7%) have monthly income of Php2,000 or USD39.26 and less. With this, most miners live below the poverty line. Only 4 percent of miners earn Php20,000 and over. Given the average amount they earn every month, it is no wonder that majority (62.1%) considered their income insufficient to meet the needs of their family.

Only 2% or 5 respondents who have ever worked in the mines said that they received other benefits aside from their salary. This includes rest day at the end of the week, medical benefit, paid medical leave, free housing, free food, and mid-year bonus. Of the 5, only 2 said that they were happy with the benefits they received from working in the mines. Interestingly, there is no life insurance benefits for the miners, considering that mining work is very risky on many levels.

a. PhilHealth

One of the interesting findings is that a significant number (68%) of the respondents are members of PhilHealth, a government mandated insurance program that aims to provide health insurance coverage for all Filipinos and consequently better access to healthcare. It provides inpatient benefits via hospitalization subsidies, outpatient benefits such as ambulatory or outpatient surgeries, and subsidies for radiation therapy, hemodialysis, and other similar procedures. Of this percentage, 65.9% said the government pays for their PhilHealth contribution. This is part of government's program to ensure indigent Filipinos' enrollment to the medical insurance program. Under the program, the Department of Social Welfare and Development (DSWD) identifies people in the communities who have "no visible means of income," or whose income is not enough to sustain his/her family. Government agencies come in to sponsor these people.[98]

A quarter of the respondents said they pay their own PhilHealth coverage. Contributions are also paid regularly.

However, while a large portion of the respondents are already covered by Philhealth, it is still far from the ideal of universal coverage for health insurance for people, especially indigent members of the community. Coverage is essential because health insurance protects the family from being pushed further into poverty, especially in the wake of illnesses in the family. An interviewee from T'boli shared the importance of financiers linking their workers to the LGU to facilitate PhilHealth application.

Philhealth is widely utilized by respondents who are enrolled in the program PhilHealth. A little over half of the respondents (54.5%) said they utilized it for their medical needs. More than half used PhilHealth for their own hospitalization, while 40.3% used it for their family members.

Table 12. Uses of PhilHealth (multiple response)

	Frequencies	Percentage
Own hospitalization	74	51.4
Hospitalization of family members	58	40.3
Medical check up	14	9.7
Laboratory, X-ray, MRI, CT-Scan	6	4.2
N	144	

[98] Rappler. 2015. "'Tsekap': Philhealth has new benefits for indigents." Rappler. 13 March. Available html https://www.rappler.com/nation/86754-philhealth-tsekap-package.

Among those who do not have PhilHealth coverage, two reasons stand out: they do not have enough money to pay the contribution or they do not know where to apply for membership. The latter two reasons point to a possible loophole in the system of identifying indigent members of the community who need medical insurance. But more than this, it shows that informal employers do not bother to enroll miners in the program, a very basic benefit that employee should be given. Another possible explanation for this has been shared by an FGD participant from Brgy. Tawig, Paracale, Camarines Norte who shared that financiers do not give benefits because work is usually temporary and only lasts for a few months.

Because of lack of PhilHealth coverage, majority (59%) have to rely on themselves for their and their family's medical needs. Only 5% reported that aside from Philhealth, they also have other health cards.

FGD respondents from Camarines Norte noted that, financiers, on rare cases, provide monetary assistance to their sick employees. However, participants specifically used the term "consideration," which implies that financiers are not bound to give any form of financial assistance to their employees. The assistance is dependent on the generosity, kindness, and capacity of the financiers to extend help to them.

b. SSS

More worrisome is the fact that only 30% of respondents are members of the Social Security System (SSS), an important social safety net that assures members pension in their old age and provides essential benefits while they are still actively contributing to the fund.

Salary loan and retirement benefits are the most common benefits mentioned by respondents that they can get from SSS. This is shown in Table 31 below. The Table is very instructive as the results show that many of the workers enrolled in SSS do not know the benefits available to them from SSS. This is probably another possible explanation for low enrollment rates: they are unaware of its advantages to them. Other possible explanations, similar to the ones propounded earlier, have to do with the informal and transient nature of the job, which social security from their employers.

Table 13. Uses of SSS (multiple response)

	Frequencies	Percentage
Medical	35	31.5
Pregnancy and childbirth	31	27.9
Retirement	44	39.6
Accident and disability	29	26.1
Death	36	32.4
Loan	45	40.5
Calamity loan	36	32.4
Other	29	26.1
N	111	

Sixty six (66%) percent of SSS members pay their own contribution, while the rest are being paid for by their company or the government. This means that the financiers of 6 in 10 are not complying with the mandatory coverage of workers to the SSS.

Close to half (47.9%) of members of SSS reported that they pay their contribution regularly.

c. Pag-ibig

An even smaller proportion of respondents said they are Pag-ibig members (13.7%). Interestingly, all employees who are or should be covered by SSS, should also be members of Pag-Ibig, whose payment should be equally shared between the employer and the employee. For those who are members of Pag-Ibig, more than half of them personally pay for their own Pag-ibig contribution. Pag-ibig, according to respondents, provides the following benefits: Housing loan (39.6%), Calamity loan (34%), Savings/Provident claims (30.2%) and other kinds of loans (24.5%).

Table 14. Benefits of Pag-ibig (multiple response)

	Frequencies	Percentage
Savings/Provident claims	16	30.2
Loan for various purposes	13	24.5
Calamity loan	18	34.0
Housing loan	21	39.6
Other	9	17.0
N	53	

4. Conditions Miners Face in ASGM

ASGM poses many occupation and community health hazards[99] by the very nature of the industry and the conditions miners face in the mines.

Majority mentioned being soaked in water and mud (69.3%) and exposure to extreme heat and cold (65.6%). Exposure to dust (46.9%) and fumes (40.6%) were also common conditions associated with mining work.

Table 15. Conditions in the mines (multiple response)

	Frequencies	Percentage
Exposure to dust	90	46.9
Exposure to fumes	78	40.6
Exposure to fire, heat, gas, flames	42	21.9
Exposure to extreme heat and cold	126	65.6
Soak in water and mud	133	69.3
Landslide	32	16.7
Mining in the sea	5	2.6

[99] Long, Rachel, Kan Sun, and Richard Neitzel. 2015. "Injury Risk Factors in a Small-Scale Gold Mining Community in Ghana's Upper East Region." *International Journal of Environmental Research and Public Health*. Aug; 12(8): 8744–8761. Available html https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4555245/

Exposure to loud noise	42	21.9
Underwater mining	15	7.8
Handling dangerous chemical like cyanide and mercury	35	18.2
Use of equipment like compressor or dynamite	26	13.0
N	196	

a. Rating of Occupational Risks

Respondents who have worked in the mines confirm the occupational hazards they face. When asked to assess the danger levels of their work, 31.8% described their work as very dangerous and 39.6% said their work is dangerous. On the other hand, only 1 in 10 described it as neutral while 2 in 10 did not find their work dangerous.

Respondents with mining work experience were asked of their assessment of the danger involved in mining work in general, and of working underground and the use of compressor, in particular. Using a scale of 1 (very dangerous) to 5 (not dangerous), the mean score from respondents' assessment of working in the mines is 2.13 which suggest that they found mining work as dangerous. The average score of their assessment of the danger involved in working underground is 2.03 while they rated the use of compressor in mining, on average, as 2.53. This implies that between the two mining conditions, respondents found working underground as more dangerous as compared with the use of compressor. Similarly, 66.1% said that there is also danger involved when one spends so much time in water (e.g., gold panning). Among the dangers mentioned are: extreme cold (75.6%), skin infection (33.1%), insect-borne illnesses (3.1), lung diseases, stomach pain, stroke, pneumonia, and drowning.

A miner from Paracale said, "Unang-una po ang pagkakabod ay napakahirap talaga, syempre lalo na yung underground mining syempre lulusong ka sa malalim na balon, wala kang makikita kung wala kang cap lamp. So may mga pagkakataon na pwedeng mag collapse kung walang mga depensa, kung walang mga proteksyon. Pangalawa yung kuryente, kung gumagamit ka ng kuryente doon sa ilalim isa iyon sa mga problema kung walang mga safety procedure maaring makuryente ang isang operator and then yung mga mahulugan ka ng bato na hindi mo maiwasan lalo kung wala kang helmet." (First, ASGM mining is very difficult. This is especially true of underground mining because you go deep into the tunnel. You cannot see anything underground when you have no cap lamp. There are times the walls could cave in, especially when there are no girders to protect he walls. Second is electricity. If you use electricity in the tunnel that becomes a problem if there are no existing safety procedures. You can get electrocuted. There are also debris that you cannot avoid when you don't have a helmet).

In Casalugan, Paracale, FGD participants shared that several deaths have been documented after miners either drowned or were buried alive when the wall of the above ground tunnel for compressor mining caved in. Compressor mining involves a 10 to 15 ft water filled well, where miners dive using a compressor hose as their oxygen line. The walls are narrow mud walls that could cave in because of the softness of the mud. This is exacerbated by miners excavating the floor of the well for gold.

b. Lack of Protective Behaviors

Despite the nature of ASGM, one in four of those who ever worked in the mines did not know of ways to protect him/herself from work related risks. It does not come as a surprise then that one in four workers also reported experiencing work related injuries. Sometimes, the lack of protective policies of ASGM operators actually contributes to work-related injuries or deaths.

In T'boli, there are reports that some operators have no logbooks to monitor the entry and exit of miners in the tunnels. Without a written record of entry, management can easily deny the death of a miner incase the tunnel caves in. Operators also cannot monitor the safety of workers who enter the tunnel without their knowledge as was the case of a miner who died of suffocation when he entered a tunnel without management's knowledge.

There is also the absence of information on safety and protective behaviors in the mines. Usually information given is not given through formal training as is done in big corporations but through induction by bosses or fellow miners. This is reflected in the low numbers of respondents reporting that safety Information has been provided to them by financiers (30%), local government (12.6%) and Miners' association (5.3%). More than a third cited other sources of information such as Ban Toxins, their own experience, their own initiative to find information, safety inspector, mining company, and cooperative.

Table 16. Source of information on safety and how to protect one's self in the mines (multiple response)

	Frequencies	Percentage
Financier	57	30.0
Miners' Association	10	5.3
Local government	24	12.6
Others	67	35.3
Don't know how to protect one's self	43	22.3
N	193	

There are also problems with monitoring the safety conditions of ASGM operations. By law, the Provincial Mining and Regulatory Board (PMRB) is tasked to regulate the safety of small scale mining operations in coordination with LGUs that have the police power to enforce safety rules governing small scale mining.

According to DENR Administrative Order No. 1997-30, a safety inspector from the PMRB is required to conduct a daily routine inspection of the mine and its premises; report findings of the daily inspection on the following variables ventilation, sanitation, unsafe conditions, unsafe acts/conditions, and working procedures. However as Engineer Esteban Martin of the Mines and Geosciences Bureau reveals, the PMRB does not have the requisite number of staff to monitor the operations of small scale mines considering their numbers as well as the size of the provinces involved. Ideally, the mining inspectors should be supported by the LGUs in monitoring the mines; however, in many cases, they do not get such support from LGUs. This is because of a panoply of interrelated reasons: LGUs do not bother to stop the miners despite violations to safety standards because the recognize the miners have no other sources of livelihood, LGU

officials from the local chief executive to barangay officials may actually have a stake in mining operations as financiers or as friends or relatives of financiers, mining keeps the local economy going, among other things.

Thus, unsafe practices are left unchecked, which contributes to their persistence. In an FGD with a miners' association members in Camarines Norte, they noted that the mining moratorium issued by the DENR to all ASGM operations has forced many miners to engage in underground activities to avoid apprehension, which has further compromised their safety.

c. Use of Safety Gears

Safety gears are worn at ASGM with almost half (47.9%) of respondents with mining experience reporting wearing safety gears when at work. However, a greater percentage (52.6%) of respondents doesn't wear safety gear. Interestingly, there are more miners (82%) in Camarines Norte who reported not wearing safety gear compared to South Cotabato (25.5%). There is high percentage of miners in South Cotabato (74.5%) who reported wearing safety gear as this has been required by the miners' association among its members.

For those who wear safety gear at work, 42% said they provided it themselves, while a slightly higher proportion mentioned their "boss" as the provider of safety gears.

Among those who reported to have used protective gears while working in the mines, head and face protective gears were the most common (81.5% and 51.1%, respectively). There were also gears for their ears and eyes, as well as body protective gears and reflectors. Other gears mentioned were boots, flash lights, and hand gloves. There is saying whether the safety gears are up to acceptable standards. During the field visits in Camarines Norte, miners only wrapped a shirt/or face towel to protect their face from dust. None of the workers observed by the researchers wore any helmet to protect themselves from falling debris. Some wore boots to protect their feet from the water especially those in the panning areas or in the compressor mining areas where the ground is wet and muddy, but there are others who did not. This means that the use of safety gears is really provisional, more than a requirement for the workers' protection. On the other hand, in one of the compressor sites, the miner who went underwater only had old goggles to protect his eyes. In the barangays of Desawo and Kematu in T'boli, workers commonly wore boots and helmets.

The higher percentage of safety gear use in South Cotabato is because of the requirement imposed by mining associations.

Table 17. Type of protective gears provided (multiple response)

	Frequencies	Percentage
Head protection	75	81.5
Face protection (mask)	47	51.1
Protection for the eyes	20	21.7
Protection for the ears	7	7.6
Reflector	17	18.5
Body protection	12	13
Other	60	65.2
N	93	

A ballmill machine used to mechanically break the ore. The machine is owned by a family that mines behind their house

E. Work Issues of those Who Have Never Worked for ASGM

Among respondents who never had any engagement in mining work, a large proportion relies on small businesses like retail or trading (44%). Other jobs include: farming (15.3%), domestic work (4%), construction (4%), and others such as teaching, hotel staff, among others. Twenty eight percent (28%) said they are not working.

The average monthly income of this group of respondents is Php3,465.5 (s.d. 5002.16). However, if those without income is excluded, the mean income of individuals who do not have mining work experience is Php4,981.64 (s.d. 5333.14). In both cases, mean income is lower than what the average monthly income of individuals who have ever worked in the mining industry. When we consider this, we begin to understand why community members are lured into mining. Mining is still considered more lucrative compared to other available jobs in the community because miners still earn relatively more than other workers in the community especially when there is significant gold find. The prospect of getting significant gold haul also goads miners to remain in the industry.

Because most of the available work in the community involves informal work, it does not come as a surprise that two-thirds said that their income is not enough to meet the day to day needs of their family. Interestingly, the economy of non-miners is also dependent on the financial status of mining in the community. In an FGD with Barangay officials in the Camarines Norte, the participant shared that the community economy is dependent on ASGM economy. When ASGM was halted following the order of then DENR Secretary Gina Lopez in 2016 to put a stop to small scale mining on account of it being illegal,[100] the respondent shared that the economy also slowed down.

> Ito po ay nabu simula noong magkaroon ng cease and desist order dito sa Camarines Norte na pinatigil lahat ng mining operations, small-scale or large-scale na kung saan ay naapektuhan ang kabuhayan ng mamamayan…. marami na rin po kasing nabiktima ng panghuli, nakukulong, nagmulta na hindi kami nakapaghanda doon sa ganoong sistema kasi wala naman malinaw na kumbaga hindi masyadong naipaliwanag sa mga mamamayan yung intension noong CDO.Ibig sabihin, dito po kasi sa amin sa Paracale

[100] Simeon, Louise. 2016. "Government Halts Operations of Small Scale Mining." *Philippine Star.* 9 August. Available html http://www.philstar.com/business/2016/08/09/1611391/government-halts-operations-small-scale-miners

more or less 80% ng mga mamamayan ay connected sa mining. Kapag nawala ang mining operation, lahat ng sektor po ay apektado, negosyante, transportation, pag-aaral ng mga bata lahat po iyan ay matatamaan. (The [mining association] started when the cease and desist order was released here in Camarines Norte where all mining operations, small scale or large scale, were halted. This affected the livelihood of many. A lot were apprehended, jailed, fined. We were not prepared for that system because it was not properly explained what the purpose of the CDO was. Here in Paracale, more or less 80 percent of the community members are connected to mining. When mining operation is discontinued, all sectors are affected: business, transportation, even the schooling of children will be affected.)

Majority of respondents (69.7%) who have no mining work experience know someone aside from their relatives who work in the mines.

When asked if miners in their community receive fair income for their work, 31% answered in the affirmative, 34% said no, while 33.8% said they didn't know. Majority of the non-miner respondents (64%) also said that miners do not receive adequate benefits. Only 2% said yes, while 32% said they didn't know whether the miners receive benefits. Most (60%) are also aware that labor laws are not strictly enforced.

Aside from perceived lack of adequate salary and benefits for miners, non-miners are also cognizant of the conditions that miners are facing in their work. The most common conditions cited are miners' exposure to extreme heat and cold, being soaked in water and mud and exposure to fumes.

There is a high awareness of wage and benefits issues faced by miners in the community because of the extent of ASGM's influence in the community. However, there is still a significant portion of non-miner respondents who are not aware of the issues faced by the miners.

F. Use of Mercury in Processing Gold

Exposure to mercury poses greater risks to two groups of people: fetuses and people who are regularly exposed (chronic exposure) to high levels of mercury such as people who are occupationally exposed to the element.[101]

1. Exposure of Miners to Mercury

Despite the prohibition of mercury use in small scale mining as per DENR Administrative Order No. 1997-30, a significant number of respondents working in the mines reported use of mercury with close to half (48.4%) saying they used mercury in processing gold. Of these people, more than half (53.8%) also reported having held mercury in the past 12 months.

[101] World Health Organization. 2017. Mercury and Health. Fact Sheet. Available html http://www.who.int/mediacentre/factsheets/fs361/en/

However, interesting to note are the lower percentage of respondents in South Cotabato who reported using mercury compared to those from Camarines Norte. Some 92.2% of the respondents from Camarines Norte said they use mercury in mining, while only 10.1% from South Cotabato said the same. On the other hand, 7.8% of the respondents from Camarines Norte said they don't use mercury, while a high 89.9% of respondents from South Cotabato answered in the negative.

Within the past 12 months, 48.8% of those who reported handling mercury have inhaled smoke coming from burning mercury. When asked if they used any protective gears against mercury, only a quarter answered in the affirmative. The most common is the mask, or in some instances, cloth to cover their nose when they have to process gold using mercury. It must be noted that only a special mercury vapor mask made of carbon cloth can really safeguard a miner from the toxic fumes of burning mercury, which costs over a thousand pesos for over 150 hours-worth of use.[102] This only means that many of the workers in mining are precariously exposed to toxic fumes at work.

In South Cotabato, ball mills are found in designated areas where ore is brought by miners for processing. This means that the use of mercury has been concentrated in these areas, limiting the exposure of those working in the mining sites to mercury. There are also processors in T'boli that use the sluicing method according to a key informant. Sluicing is a form of gravity concentration method, an alternative method to mercury use, which employs gravitational and frictional forces to separate gold from heavier particles.[103] The designation of specific processing sites and the prohibition of the use of mercury in the mining sites has drastically reduced the exposure of miners in the area to mercury. But this is not to say the practice has been totally eradicated.

There is more widespread use of mercury in Camarines Norte because alternative technologies are not yet available or if they are, they are expensive because they require the purchase of big machineries, which mining associations cannot afford, let alone ordinary miners. Large machineries are usually sourced from abroad rather than locally. According to one FGD participant in Paracale, government has to step in to provide alternative technologies to process gold, implying that miners still rely on mercury because it is the cheapest available resource to process gold and most affordable to unorganized miners like them.

2. Exposure of the Community to Mercury

It is not only miners who are exposed to mercury, but also the community as well. Majority (76.3%) said that processing of gold using mercury was done in areas surrounded by houses. Specifically, 12.9% admitted that they process gold within their residential premises. Fumes from burning mercury easily surround adjacent areas. There are reports that the smell of burning mercury lingers for a time in the atmosphere every time miners burned mercury to

[102] Mercury Safety Products. No Date. Mercury Vapour Proof Mask. Available html http://www.mercurysafety.com/mercury-vapour-proof-mask

[103] Falconer, Andrew. 2003. "Gravity Separation: Old Technique/New Methods." *Physical Separation and*

Mercury is being used to separate gold particles from rocks. The processing area is behind the house of the miner.

isolate gold thereby affecting unsuspecting residents of the community. But the greater impact is on the household of miners especially if mercury is burnt indoors or within the premises of the miner's house. Mercury sticks to the household walls and surfaces and is re-emitted overtime into the air [104] causing long-term chronic exposure to family members.

In Labo, the team was able to observe mining families storing mercury in makeshift huts near their homes. This is also where the miners process the gold using mercury. In some areas, it is reported that some families process the gold in their homes. One child respondent said that his father kept mercury in their house, which he and his siblings were able to access and play with.

3. Awareness on the Ill-effects of Exposure to Mercury

There is a very high awareness that the use of mercury is dangerous to health with eight (8) in 10 mining and non-mining respondents agreeing to the statement that mercury exposure is dangerous to health. Furthermore, almost all of those who said that mercury use is dangerous also agree that inhaling fumes when burning mercury has negative effect on one's health (98.5%). Such negative effects include poisoning, lung problem, death, illnesses among children, skin diseases, and shortness of breath. We will see here that knowledge does not necessarily translate to protective actions on the part of the miners.

There is an almost fatalistic attitude towards the use of mercury among miners. In an FGD in Labo, Camarines Norte with barangay officials, the respondents said that unless affordable and accessible technologies to process gold are made available, miners will continue to rely on mercury.

Unfortunately, a good proportion of miners are unaware of any other technology other than mercury to separate gold from ores (47.2%). Fifteen percent (15%) on the other hand said that there are other ways to do so without using mercury; however, such knowledge is more prevalent in South Cotabato where alternative gold extraction technologies already exist. When probed, respondents mentioned rock grinding, gravity concentration, use of "madre cacao, sunflower and

[104] Moher, Paleah Black. 2013. "Mercury Recycling in Artisanal Gold Mining: The Good and the Bad." Artisanal Gold Council." Available html http://www.artisanalgold.org/publications/articles/mercury-recycling-in-artisanal-gold-mining-the-good-and-the-bad/.

sayote", and the so-called Benguet method.[105] There were also some respondents who mentioned the natural way, but cannot explain what it is.

According to Engr. Martin Esteban of the Mines and Geosciences Bureau, cyanide is another alternative chemical used to separate gold particles from ore. It must be noted that cyanide is only toxic in large doses; hence, it is safer than mercury. A dilute solution of cyanide is used in the process.[106] However, the chemical is more expensive and it takes a longer time for miners to process the separation of the gold particles from ore. In other words, it is not as efficient in separating the gold from the ore. Thus, ASGM miners opt for the cheaper, more readily available, and "more efficient" mercury in separating gold from ore.

In Paracale, Camarines Norte, FGD participants said that miners have attended meetings and orientations conducted by BanToxics on the dangers of mercury use. In South Cotabato, the Municipal Sanitary Inspection Officer shared that the LGU, the DENR, and officials from the Provincial Government conduct inspection missions and lectures in mining areas.

From the survey, we will see that there have indeed been efforts in providing the miners and the community information. Surveyed respondents reported barangay health workers as the major sources of information on the negative effects of mercury on health (45.1%). Respondents also cited TV as a source of information (24.2%), followed by the municipal government (23.6%). Ban Toxics and doctors were likewise mentioned as sources of information. However, the low percentages citing they received information only mean that a sizeable proportion of community members are not reached by the information campaign conducted by various stakeholders. But even if reached, the information does not automatically translate to protective behaviors. Sometimes, there is a disjuncture between what people know and how people behave, in this case information about mercury will not necessary stop the miners from using mercury.

Table 18. Sources of information on mercury (danger to health) (multiple response)

	Frequencies	Percentage
Ban Toxics	59	18.1
Doctor	59	18.1
Employer	3	0.9
Barangay Health Worker	147	45.1
Municipal government	77	23.6
Television	79	24.2
Internet	4	1.2
Other	66	20.2
N	326	

[105] 911 Metallurgist explain that in the "Benguet province, a group of miners have been using the mercury-free gravity-borax method (GBM) for gold extraction for decades. This method basically requires the same equipment as the amalgamation methods. However, after the rod milling, an ore concentrate holding the heavy minerals is produced by using a launder (gold sluice) and a gold washing pan. The heavy mineral concentrate is mixed with borax powder. By blowtorching the mix, the borax melts and the gold sinks to the bottom. It has recently been demonstrated that under identical conditions, GBM yields more gold than the traditional amalgamation method." Available html . https://www.911metallurgist.com/blog/mercury-free-gravity-borax-method-gbm.

[106] Miningfacts.org. No Date. "What is the role of cyanide in mining?" Available html http://www.miningfacts.org/environment/what-is-the-role-of-cyanide-in-mining/

4. Disposal of Used Mercury

But even with information, this is not a guarantee that the right choice will be made in disposing mercury because it could incur additional costs on the part of the informal miners.

Water-laced mercury used to separate gold from ore is usually poured down the soil with 20.1% of respondents saying this, while 15% said it is disposed of through the river or stream. The improper disposal of mercury is further confirmed by the field visit to a "cooking" facility in Camarines Norte, which was located a few meters away from a water well where the family who owns the mining facility get their water for their everyday consumption. In the facility, mercury-contaminated water is directly poured on the soil, which poses dangers to the environment and people. The book *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability* reports that mercury has been found to leach to ground water or affect surface alluvial aquifers that could has negative impact on the community and the environment.[107]

In areas near rivers, the sludge into drained into the running water. The Municipal Sanitary Inspection Officer of T'boli South Cotabato reports that in some areas, the banlas mining method persist despite this being banned by the LGU. Banlas mining "involves the pouring of large amounts of water using high-pressure water jets on a mountain's surface to extract the rocks containing the gold ore, and then pan them with mercury."[108] The sludge is disposed of directly into the river system, which the Sanitary Inspection Officer reported has turned the river brown and significantly laced with mercury. And because the river system flows downstream, people from low lying areas are also affected.

Mercury disposed in rivers could produce the more lethal kind of mercury—methyl mercury—which fish ingests and which could affect people who consume tainted fish.

According to respondents, proper disposal of mercury is the responsibility of the financier (46.4%). About 12% said that it is the responsibility of the miners' association while 6% mentioned the government that has responsibility for such action. A small percentage of respondents (11.3%) said that this is the responsibility of all those involved in mining and even smaller 6.4% said it is the government's responsibility and an even smaller 2.3% said it is the responsibility of the LGU. Lastly, 15.6% of the respondents said they did not know whose responsibility it is to dispose of mercury. From the figures, we can glean that over 75% of the respondents are aware of the different stakeholders who are responsible for the proper disposal of mercury. However, majority think that the responsibility rests on certain individuals or groups instead of this being a collaborative effort among the government, financiers, and miners.

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[107] Barringer, Julia, Zoltan Szabo, and Pamela Reilly. 2013. "Occurrence and Mobility of Mercury in Groundwater." In Bradley, Paul (ed). *Current Perspectives in Contaminant Hydrology and Water Resources Sustainability*. InTech Open Books.

[108][108] Estabillo, Allen. 2013. "'Banlas' mining getting widespread in SouthCot." *MindaNews.* 28 August. Available html http://www.mindanews.com/top-stories/2013/08/banlas-mining-getting-widespread-in-southcot/.

A respondent from Paracale said that they use a chemical that enables them to recycle mercury. Through this, there is no longer the need to haphazardly dispose of mercury. However, it has not been verified whether this method is proven to enable the recycling of mercury.

The sad truth is that even with the awareness of stakeholders' role in the proper disposal of mercury, without the proper disposal technologies, this will be impossible to achieve. There are three accepted ways of the disposal of mercury: physico-chemical treatment (that stabilizes and solidifies mercury), the use of specially engineered landfill, and the use of permanent storage (underground facilities).[109] None of these technologies are being currently used in the study sites. Ideally, LGUs should invest in the construction of disposal facilities.

5. Effects of Mercury to the Environment

Mining and non-mining respondents recognized the negative effect of mercury use on the environment. Among those mentioned are its effects on air quality, water contamination, and fish poisoning. There are also a substantial proportion of respondents who are not aware of mercury's effect on the environment (23%), which makes us understand better why the improper disposal of mercury persists. In Tboli, a respondent has noted that the river has become muddy because of mining activities. In Labo, there are talks among community members that the water system is heavily contaminated by mercury; however, they do not seem to be worried about it and accept it as a matter of course. However, in a neighboring community, it was reported by an informal informant that people are wary of vegetables coming from Labo as there are fears that the vegetables are also contaminated by mercury.

Table 29 below presents information on respondents' perception on the effects of the use of mercury to the environment There is high proportion of respondents who know the negative effects of mercury use on health, food consumption and environment. At the same time however, a substantial number reported not knowing anything about mercury's negative effects. There is very high awareness on mercury as:

- pollutant,
- ingestible by fish
- dangerous when ingested by humans
- dangerous when burned and fumes are inhaled by human beings
- affecting the ground water system

However, there is false awareness on how to protect oneself from fumes from burning mercury. There is also little awareness on symptoms of mercury poisoning.

[109] United Nations Environment Program and International Solid Waste Association. 2015. Practical Sourcebook on Mercury Storage and Disposal. Available html https://wedocs.unep.org/bitstream/handle/20.500.11822/9839/-Practical_Sourcebook_on_Mercury_Waste_Storage_and_Disposal-2015Sourcebook_Mercruy_FINAL_web.pdf.pdf?sequence=3&isAllowed=y

Table 19. Perception on some issues regarding mercury use

	Correct	False	Don't Know
Mercury pollutes rivers, lakes and seas	76.3	13.4	10.3
The fish can eat mercury disposed in water	68.3	13.4	18.3
Consuming fish contaminated with mercury has effect on people's health	75.3	7.7	17.0
Used mercury thrown in soil does not affect water system.	19.8	59.8	20.1
Mercury disposed in rivers can spread to other areas.	79.4	11.1	9.3
Fumes coming from burning of mercury do not have effect on people's health	12.6	77.3	9.8
It is easy to detect if someone was poisoned by mercury.	29.1	15.2	55.4
One is protected from inhaling fumes from burned mercury by covering one's face with a piece of cloth.	67.3	17.3	15.2

The received information about the negative effects of mercury on the environment from the barangay (29.5%), the municipal government (25.3%), television (23%) and Ban Toxics (17.5%).

Table 20. Sources of information on mercury (danger to environment) (multiple response)

	Frequencies	Percentage
Ban Toxics	67	17.5
Employer	1	0.3
Barangay	113	29.5
Municipal government	97	25.3
Television	86	22.5
Don't know	88	23.0
Other	59	15.4
N	324	

6. The Persistence of Mercury Use

In reality, mercury should not even be used in mining because of the known deleterious effects of mercury to the health of people and the environment. The Implementing Rules and Regulations (IRR) of Republic Act No. 6969 identifies mercury as one of the controlled substances whose use, storage, manufacture, import, process or transport is monitored by the Department of Environment and Natural Resources. The DENR holds the authority to inspect establishments harboring mercury and to confiscate or impound those found not complying with the standards outlined in the IRR.[110]

However, the DENR seems to be doing poorly in inspecting and confiscating mercury in the communities. In South Cotabato where mercury use has been relatively successfully confined in particular areas, one respondent said:

[110] DENR Administrative Order No. 29. Series of 1992. Implementing Rules and Regulations of Republic Act No. 6969. Available html http://pod.emb.gov.ph/wp-content/uploads/2016/06/DAO-29-1992-Implementing-Rules-And-Regulations-of-Republic-Act-6969.pdf.

> Since the government na talagang may proposal natin to avoid using mercury, talagang hinihintay ng mga operators iyong time na yung government natin talagang magbibigay sila ng order, maliban yung sa order kapag sila na mismo yung tumulong satin dito sa operation, natin for us to stop using mercury. Talagang yung mga operators natin, talagang mag-cocooperate yun. (The government has proposed to end mercury use, but operators are still waiting for the time for the government to give an order to really end its use, aside from the order coming from the LGU when we have operations here to stop operators from using mercury. [When the day comes], our operators will cooperate).

Despite the existence of policies banning the use of mercury in small scale gold mining such as the IRR of RA No. 7076, the respondent has the impression that the government has not been resolute in stopping the use of mercury. While the Municipal Environment and Natural Resources Officer (MENRO) of T'boli conducts site visits from time to time to check mining operations, including the use of mercury and stops those who are found using the illegal chemical, however, there has been no concerted crackdown to stop its use. For the MENRO and the PMRB, it is difficult for them to inspect ASGM given the lack of staff, which is aggravated by the scope of the area of their jurisdiction, which stops them from monitoring all areas regularly.

On the other hand, a local government official from Labo, Camarine Norte said that there was no point in stopping the miners from using mercury. This is because stopping them will mean their family will go hungry without because for many, mining is the only livelihood they know. Thus, at play here is the lack of resoluteness in enforcing the law and the Minamata Convention which government ratified to eventually phase out the use of mercury because of the lack of alternative jobs for miners and also pity at the possibility for the miner of losing his or her source of livelihood. Also at play here are local government officials turning a blind eye on the problem.

On the level of the DENR and the Environmental Management Bureau (EMB), there is failure to enforce the law because of staffing shortages. They have no staff to monitor the mining going in various mining areas all over the country. LGUs, which the DENR can tap for monitoring of mercury use, on the other hand, is not as cooperative.

Moreover, according to Gerry Sanez of the EMB, mercury used in ASGM is mostly acquired from the black market by miners. Suspicions abound that local dentists might be involved in the illegal trade of mercury since they have the authority to legally import, buy, and use mercury or that mercury is being brought to the local communities by Chinese financiers or traders. When asked where they source their mercury from, local miners are almost always reluctant to divulge such information. One respondent from Paracale, however, identified buyers of gold as the ones supplying mercury. In T'boli, miners source their mercury from the Davao black market at Php 5,000 to Php 10,000/kg (USD98.40 to USD197). Mercury was introduced in T'boli by immigrants from Tagum during the gold rush of the late 80s. There are also suspicions that local officials are in cahoots with the illegal trade of mercury because some of them are actually involved in ASGM as financiers or perhaps they receive bribes from traders, hence there has not been a serious crackdown in the trading of mercury.

Respondents of FGDs and interviews are almost resigned with the idea that with the persistence of poverty, the lack of alternative livelihoods that will enable them to earn as much and as quickly as in mining, and the lack of alternative technologies to separate gold from ore, miners will continue to stay in the industry and to use methods of gold retrieval that are dangerous to people and the environment. While there are available alternative green technologies to separate gold from ore, the technologies are not yet widely available, especially in Camarines Norte. Miners in Paracale also reported that alternative technologies have already been shown to them; however, there is a sense of trepidation in using these methods over the old method of using mercury. He said, "Mayroon ng pinakita sa amin through demonstration noong mga parang old method na by parang ano lang, binubukod lang parang manual talaga siya na kumbaga medyo long procedure, talagang matrabaho siya, matapon siya. Kaya iyon yung una pa lang na pinakikita sa amin." (We were shown through demonstration old methods of separating [gold], but the procedure was manual, it took longer to perform, it required a lot of work, and it was inefficient and led to wastage of gold.)

Engr. Esteban Martin of the Mines and Geosciences Bureau (MGB) said that it would not be as simple to provide alternative technologies in ASGM sites because of the complex characteristics of ore in the Philippines. Some are coarse and some are found in mud piles. The different characteristics require different ways of processing the gold to enable the efficient and most effective recovery of gold.

G. Health Condition and Health Seeking Behaviors

Majority of all the respondents considered themselves to be of fair health (47%) while 36% are of good health. Only 10.9% said their health is poor and 2.3% said that their health is in very poor condition.

Table 21. General health condition

	Frequencies	Percentage
Very poor	9	2.3
Poor	42	10.9
Fair	182	47.0
Good	139	35.9
Very good	15	3.9
N	387	

A little over half (54.2%) of all respondents have experienced some forms of illnesses in the past year. The most common was fever as experienced by 6 in 10 respondents. This was followed by cough, at almost the same percentage as fever. Forty five percent reported suffering from headaches while 30% said they felt muscle weakness and another 27%, of muscle pain. Twenty two (22%) percent said they had other forms of medical conditions, low blood or anemia, epilepsy, arthritis, sleeping disorder, kidney problem, hepatitis, UTI, thyroid problem, lung problem, ulcer, etc.

Table 22. Illnesses experienced the past year

	Frequencies	Percentage
Fever	128	61.0
Cough	125	59.5
Muscle weakness	63	30.0
Muscle pain	57	27.1
Tingling of the hands and feet	44	21.0
Headaches	95	45.2
Eye problems	44	21.0
Skin problems	19	9.0
Stomach problems/diarrhea	18	8.6
Breathing problems	28	13.3
Extreme fatigue/Tiredness	37	17.6
Forgetfullness	22	10.5
High blood pressure	40	19.0
Diabetes	4	1.9
Others	47	22.4
N	387	

Some 77.1% of those who complained of illnesses in the past year sought medical attention. They were more likely to visit a health center (38.9%) for their health needs, followed by hospitals (37.7%). Private doctors attended to 16.7% of respondents who had some form of medical condition.

Table 23. Health service provider for symptoms of medical illnesses (multiple response)

	Frequencies	Percentage
Private doctor	27	16.7
Health center	63	38.9
Hospital	61	37.7
Company doctor	3	1.9
Traditional healer (albularyo)	12	8.0
N	162	

In most instances, expenses for medical services were out of pocket since Philhealth covers only a portion of inpatient bills and does not cover medical consultation or the purchase of medicines. Almost forty percent (40%) of respondents who had some medical condition the past year had to pay for their own medical needs. A third availed of free medical services from the government, while 11.1% have Philhealth coverage.

Despite being sick, 4 in 10 still continue to work.

While sick, respondents' household was able to sustain itself through the spouse's work (52.5%), children's work (21.2%), borrowing money from neighbors and relatives (15.3%).

Table 24. Ways the HHs was able to support its needs while R was sick (multiple response)

	Frequencies	Percentage
Spouse has to work	62	52.5
Got loan from loan sharks	1	0.8
Children have to work	25	21.2
Borrowed money from neighbors/relatives	18	15.3
Ask help from parents	10	8.5
Ask help from cooperatives	2	1.7
Borrowed money from rural or commercial banks	5	4.2
No source of income	8	6.8
N	118	

One in four respondents also reported that they experienced being wounded, and/or fractured because of work and majority of them sought medical treatment for their condition (69.9%). The health center was the most common source of health service provision (46.2%), followed by traditional healer (26.2%).

Table 25. Health service provider for accidents and injuries (multiple response)

	Frequencies	Percentage
Private doctor	6	9.2
Health center	30	46.2
Hospital	15	23.1
Company doctor	1	1.5
Traditional healer (albularyo)	17	26.2
N	65	

While recuperating from their condition, close to half (47.3%) of those who experienced being injured continued working. At the same time, they got support from their spouses (40.8%), as well as from their children (18.4%). More than a quarter also resorted to borrowing money from neighbors/relatives in order to provide for the needs of the household.

Table 26. Ways the HHs was able to support its needs while R was recuperating from accidents and injuries (multiple response)

	Frequencies	Percentage
Spouse has to work	20	40.8
Got loan from loan sharks	1	2.0
Children have to work	9	18.4
Borrowed money from neighbors/relatives	13	26.5
Ask help from parents	2	4.1
Ask help from cooperatives	2	4.1
No source of income	4	8.2
N	49	

H. Access to Social Protection Mechanisms

Social protection is "the set of policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption/loss of income."[111] Vulnerability and poverty may be exacerbated by risks such as natural disasters, civil conflicts, economic downturns, household reversals, crop failures, unemployment, illness, accident, disability, temporary job loss, loss of informal support networks, and other threats to the future of the household and its members.[112]

One of the more notable programs of the government for poor Filipino families is the Conditional Cash Transfer Program, otherwise known as the Pantawid Pamilyang Pilipino Program or the 4Ps program, which provides cash subsidies to the poorest Filipino families provided they send their children to school and bring them to health centers.

Despite the socioeconomic conditions of the respondents whose average family incomes fall below the poverty threshold of PhP9,064 (USD178) average monthly income for a family of five to meet both basic food and non-food needs[113] and the food threshold of PhP6,329 (USD124) for a family of five to meet their basic food needs, only 30.9% of the respondents are enrolled in the DSWD's conditional cash transfer program. For 4Ps beneficiaries, they consider the cash incentives they received as "very helpful" in meeting their daily needs. Some 68.8% of the respondents are not enrolled in the program. There are indications both from the quantitative and qualitative data that some deserving families have not been included in the program.

In an interview with women miners (*nagkukulipaw* or those who scavenge for excess ore in ASGM operations) from Camarines Norte, one of the miners who is the sole breadwinner of the family, has 11 children, and currently earns less than PhP6k a month, said she is not a member of the 4Ps program because she is not allied with local barangay officials who were instrumental in identifying the beneficiaries of the program. There are also allegations coming from some miners from Camarines Norte that barangay officials inserted the names of family members and friends in the 4Ps list, which denied rightful beneficiaries the chance to be included. Although the mayor denied that the identification of beneficiaries is tainted by political considerations, the miner's case illustrates that there are families deserving to receive the assistance but do not. The mayor admits that the 4Ps selection process has not been without faults.

In the absence of direct help from the government, families rely on loans to sustain the needs of their families. Some 66% of the total number of respondents said they borrowed money over the last two years. The most common sources of loan were lending companies/microfinance companies (51%), such as local credit unions and NGOs. Informal sources were relatives and neighbors (30% and 18.2%, respectively. There was also a small percentage that relied on loan

[111] Asian Development Bank. 2003. Social Protection. Available html https://www.adb.org/sites/default/files/institutional-document/32100/social-protection.pdf

[112] Ibid.

[113] Philippine Statistics Authority. 2015. 2015 Poverty in the Philippines. Available html https://psa.gov.ph/sites/default/files/2015_povstat_FINAL.pdf

sharks (6.3%). In an FGD, another source of loan was the gold buyer, whom miners develop a trusting relationship with through regular transactions.

Table 27. Source of loan (multiple response)

	Frequencies	Percentage
Boss/Supervisor	14	5.5
Spouse	1	0.4
Relatives	76	30.0
Neighbors	46	18.2
Loan sharks (Bombay)	16	6.3
Cooperative	9	3.6
Rural bank	4	1.6
Micro finance/Lending	129	51.0
N	131	

The amount borrowed ranges from as low as Php100 (USD1.96) to as high as Php500,000 (USD9,815). The median amount borrowed is Php5,000 (USD98.15). Sixty six percent had to pay interest for the loans they acquired and the rate varies widely (from 0.5% to 30%). Common uses of loans were: daily needs, education of children, medical needs of family members, and construction/repair of houses. Respondents claimed that they were able to pay back their loans (83.5%).

Of those who borrowed money over the last two years, there were more women (57%) who took out a loan compared to men (43%). In Philippine households, women household heads are more likely in charge of budgeting the family finances.

Almost a quarter of respondents said they received financial support from institutions in the past 6 months such as local government units (Office of the Mayor), DWSD, Catholic Church, and DOLE. Only 7% of respondents said that they received free vocational training by the municipal government and TESDA in the past 2 years, such as cooking, welding, dressmaking, caregiving and electronics. In terms of reach, out of the total respondents, the reach was very small. Almost half of the respondents who received training said that they were able to use the training for livelihood activities. Among those who were not able to use the skills they acquired, they cited reasons such as lack of capital to put up their own business, were too busy with their family responsibilities and or they pursued other interests.

The mayor of Labo, Camarines Norte shared an interesting view of the livelihood programs: “Ang livelihood program na binibigay naman ng gobyerno ay palliative lang eh. Di naman talaga sustainable. Maga-allocate ka ng pondo, ibibigay natin, i-implement natin but after that, number one pagdating sa gobyerno di naman nagbibigay ng capital ang gobyerno. Bibigyan ng equipment, bibigyan ng kung ano ano pero bibigyan ka ng pera that is not allowed, paano ko naman iyan papatakbuhin kung wala akong capital? Paano ako magluluto kung wala naman akong lulutuin?” (The livelihood program given by government is a palliative program. It’s not sustainable. They allocate funds, award the funds, implement the program, but the government does not give capital. They will give you equipment, you will be given various things but you are

not allowed to be given money, how will you run the business without capital? How will you cook if you don't have anything to cook?) Given this, after a time, those given training just go back to mining.

Aside from training programs and financial assistance, close to 20% of respondents said that their children were able to able of educational assistance, mainly form the municipal government and the national government. In both areas of Camarines Norte and South Cotabato, scholarships have been made available by the local chief executives.

When the mines were closed in Camarines Norte through the order of then DENR Secretary Gina Lopez, the livelihood of many miners was affected. There were miners who were apprehended and jailed for continuing their mining activities. Mining Association members from Paracale revealed that apprehended miners were being charged PhP25,000 for bail, which pushed them to an even more precarious economic condition. But the effects were not only for the apprehended miners. With the halting of small scale mining operations in the area, the president of the mining association in Paracale shared that businesses dependent on mining slowed down, students had to stop schooling to find work in other communities, and poverty worsened because of this. However, it seems there has been no effort on the part of government to mitigate the social impact of the stoppage of ASGM activities in the area.

I. Child Labor Issues

Thirty eight percent (38%) of respondents said that there are children below 18 years old who are helping in the mines in their community. This means that a sizeable number of respondents admit that child labor persists despite child labor laws. In South Cotabato, an ordinance was passed banning children from working in the mines. This has reduced the number of children working in ASGM particularly those involved in dukduk (manual breaking of ore); however, respondents said the problem persists because they are now doing this on the sly at home, out of the scrutiny of government officials.

Their involvement is prompted mainly by poverty (49%) as well as the child's desire to help their parents (23.5%) according to the survey respondenst. One of the chid FGD participants, Sherwin (not his real name) shared that he had to stop school because his parents could no longer afford expenses for his education and it is his duty to help feed the family. He had to stop in his sophomore year to give way to his younger siblings completing school.

Connected with this is the fact that children see mining as a lucrative endeavor, which allows them to earn money they will never earn elsewhere. For instance children FGD participants from a barangay in Camarines Norte shared that they could earn as much as PhP1,000 a day if there is a good haul of gold on a particular day.

1. Demographics of Child Labor

According to respondents, children as young as 7 years old are already assisting in the mines. The mean age of children working in the mines based on respondents' answers is 13.5 years old (s.d. 2.430). A respondent from Paracale said that the miners cannot do anything to stop the children

when they themselves prefer to work in ASGM. He says, “Sa amin po hindi talaga naman inaallow ang bata, kaya nga lang may mga pagkakataon na may mga bata na nanghihingi rin. Kumbaga siguro iyong yung mga pamilya na talagang marginal family, mga mahihirap din, mga ano din na siguro sa kawalan din naglalakas loob na ang mga bata na manghingi, pero wala kaming inoobliga na mag trabaho sila kasi bawal naman talaga siya.” (We really don’t allow children here. However, there are times when the children beg to be given ore. They are most likely from marginal families so they muster enough courage to ask. But we don’t oblige them to work because it is really prohibited.) Adults empathize with the plight of children from marginal families, thus, the children are given a portion of ore, which the children pan for gold.

Table 24 presents the different activities that children undertake when they get involved in mining work. The most common are gold panning (60.1%), hauling (46.6%) and processing (35.1%) of ores.

There is no set time as to the work of children because of the informal and unstructured nature of work. Often, the work hours of children are the same as adults. There were reports from FGDs where there are days when children work for 24 hours. When they work long hours, FGD partiicipants reported taking breaks in between when they are too tired. FGD participants shared that when they have to work overnight, they are allowed to take short naps provided there is reliever to replace them. The long work hours are especially true of children who work full time in the mines and have left school. However, for those who remain in school and still choose to work, they work on weekends or after school on a part time basis.

Table 28. Activities of children below 18 years old in the mines (multiple response)

	Frequencies	Percentage
Hauling ore	69	46.6
Ore processing (manual breaking of ore)	52	35.1
Gold panning	89	60.1
Ore processing (separation of ore from gold using mercury)	33	22.3
Digging	36	24.3
“Pagsisid sa ilalim ng tubig”	18	12.2
“Pagsuot sa mga maliliit na butas”	20	13.5
Other	29	19.6
N	148	

Interestingly, miners from Paracale revealed that children are also exposed to mercury when they pan for gold. One 16 year old respondent from T’boli, on the other hand, shared that his dad used to bring home ore, which family members hammer to separate the gold particles from the rocks. The dad also brought mercury with him, which he just kept in one corner and which the respondent played with when he was younger.

Four in 10 respondents said that children received the same amount of payment as adult when they work in the mines. Sixteen percent however do not know if adult and children are paid he same amount for their work in the mines. Majority (90.4%) said that children do not get PhilHealth benefits from their mining activities.

However, in the FGDs, it appears children are paid less than their adult counterparts. Analyn, 17 from T'boli, who used to work for ASGM, shared that they were paid from PhP70 to 150 for a high grade sack, the contents of which they manually pound to separate the gold particles from the rocks. Another child from T'boli who used to work for a ball mill when she was in fifth grade was paid PhP50 per sack. However, some adults conned children by paying them less than they deserve according to the FGD participants. One participant explained it this way: "Minsan dinadaya ang mga bata ng mga nakakatanda. Tapos sinasabi sa kanila, ito lang sa iyo kasi mas malaki ako mas marami akong kinakain. Mas marami akong pinapaaral. Ikaw, ang sarili mo lang naman." (Sometimes, adults cheat children. They would say, this is what I will give you because I am bigger than you and I eat more than you do. I have several children to send to school. You, on the other hand, just fend for yourself).

2. Consequences of Child Labor in ASGM

One immediate consequence of children's involvement in mining activities is the disruption of education. Three (3) in 10 respondents reported that in their communities, children have to stop studying when they start assisting in the mines. Forty two percent (42%) on the other hand said that while there are children who have to stop schooling, there are also others who continue studying despite being involved in mining activities.

When asked why children have to stop studying, majority (38.9%) mentioned that work is more important for children than school. This is illustrated by the case of Christian (not his real name) who decided to quit school because his parents were both unemployed. He assumed the role of breadwinner of the family, which means the survival of the family was hinged on Christian's capacity to earn for the family. Choosing between school and family welfare, children choose the welfare of their family because it is the most practical decision given that it would spell the survival of their family. They no longer see the potential of education to change their life in the future.

In the case of Malaya, Labo, Camarines Norte, adult FGD participants said some children were forced into mining because there was no high school in their barangay. The local high school was located outside the barangay which made travel to school expensive (PhP200). In the absence of school and other livelihood opportunities, children are left with little choice but to go into mining.

There are also those who want to earn money so that they can continue with their studies later on (23.3%) sine parents cannot afford to send them to school. Thus, for them, working is temporary and is done to accomplish the goal of finishing formal schooling at some point. One of the problems cited by the children participants was that while high school education was free, the schools require numerous miscellaneous fees such as fees for the report card that costs PhP400, school projects, floor wax and brooms, electric fans, etc. In fact, one of the reasons Christian cited for dropping out of school was that the family did not have money to pay for these extra requirements from class. Aside from these, students also worry about daily allowances.

Majority of respondents (67.1%) said that Alternative Learning System or ALS is also available in the community. There are some who access this, but there are those, especially those who

work fulltime in the mines, who have foregone the opportunity to finish school through ALS because of time constraints and their interest has to do with earning money more than finishing school. Others are also more interested to go back to the formal school system or to save enough money to enroll in vocational courses through TESDA.

3. Reasons for the Persistence of Child Labor

Interestingly, a significant number of respondents (42 %) think child labor persists in their community because the practice has endured for generations; in other words, people have been reared into a tradition or culture that finds child work and child work in ASGM as acceptable. In fact, 32% of the respondents who ever worked for ASGM started working in the mines when they were 17 years old and below, with a small proportion starting work in ASGM as young as 8 years old (5 individuals). The initiation of children into work in the mines mirrors Pierre Bourdieu's theory of social reproduction, which states that "parental codes and practices" are "transmitted to children through the process of family socialization."[114] This is validated by the sharing of child FGD participants who said their fathers introduced them to work in the mines to enable them to contribute to the family finances. One boy, Marco (not his real name), who started working when he was six years old, was initiated slowly into work in the mines. At the start, he merely ran errands for the miners such as fetching food, later, when he was a bit older, he was asked to go under water for compressor mining. Another boy, on the other hand, was recruited by a financier aunt to work for her ball milling operations. Some children started out watching their parents work, fetching food or water for miners, graduating to breaking ore with hammers, when they are big and strong enough, they start hauling ore or "cooking" gold, and so and so forth. Getting immersed into the mines very early on has limited their realm of possibility to mining. Although parents rue mining as difficult work and that they would not want their children to be involved in mining, children's constant exposure to mining has made it a natural course for them. It has become an acceptable future, especially if other futures have not been made possible through education.

For some, there is a lot of pride in being able to help in the family finances. One child FGD participant thinks that it was more productive for him to be in the mines rather than in school because it enabled him to put food on the family table and to take care of the family. There is even a joke among the child miners who left school that in school they earn a grade of 70, but in ASGM they could earn P100 in a day. Thus, any effort to curtail child participation in ASGM work would need to combat three things: cultural practices, personal values of the children and their families, and the ability of work to put food on the child's family's table.

While cultural practices can be modified, especially with the enforcement of strict laws prohibiting certain community practices, problems in the implementation of laws could get in the way of curtailing practices that might be inimical to the welfare of children. Some 13% of

[114] Tzanakis, Michael. 2011. "Bourdieu's Social Reproduction Thesis and The Role of Cultural Capital in Educational Attainment: A Critical Review of Key Empirical Studies." *Educate.* 11 (1): 76-90. Available html http://www.readyunlimited.com/wp-content/uploads/2015/09/Bordieus-Social-Reproduction-Thesus-and-Role-of-Cultural-Capital-in-Education.pdf

respondents who shared children still work in ASGM explained that the persistence of child labor in the community is due to the fact that laws are not strictly enforced. On the other hand, 7% were of the opinion that LGUs are remiss in monitoring ASGM, while 8 percent said that people are not aware of laws prohibiting the practice.

The case of Labo, Camarines Norte is instructive of this. The LGU is cognizant of the problem of child labor in the community, however, it is difficult to control child labor in their community because when LGU officials and representatives monitor the mines, the children are nowhere to be found or if caught, they deny their age. Interestingly, however, the age of children can easily be verified by the LGU through birth or school records, if the LGU is determined enough to stop child labor. They have tried to provide scholarships to enable at least one child in each family from rural communities to graduate from school, but the children prioritize work over schooling. The mayor says, "…imbes na pumasok sa eskwelahan, maghahanapbuhay na muna ako, magkakabod muna ako kung ano man pwedeng pagkakakitaan" (…instead of going to school, I prefer to work first, I will go into mining or whatever job will earn them money).

The LGU official also adds that they are not inclined to implement the law fully because work serves as an important lifeline for the children and their families because mining is more often than not their only source of income.

There is also the tendency for barangay officials to deny the existence of the problem. When the research team went to a Barangay in Camarines Norte, the barangay officials said all the children were in school because they are no longer allowwed to work in the mines. However, when the researcher chanced upon a young boy, she found out the miner was only 16 years old. Thus, the barangay officials could be in denial of the continuing existence of the problem, they are turning a blind eye on the problem, or they are also part of the problem because there is no drive to fully enforce the law. In another instance, a barangay official said that when confronted, children deny their age, which could be easily verified by checking birth or school records.

Table 29. Reasons why there are children working in the mines (multiple response)

	Frequencies	Percentage
They are paid very little amount	2	0.6
Laws are not enforced strictly	41	12.6
Local government are not monitoring the mines	24	7.3
Parents force their children to work in the mines	8	2.4
Employers do not ask for real age of miners	6	1.8
It is the usual practice that children work in the mines	137	41.8
People do not know of the law against child labor	27	8.2
N	328	

There is general consensus among respondents that only those who are 18 years old and above should be allowed to work in the mines. When asked if there is a law that prohibit the involvement of children aged 17 years and below from working in the mines, 85% of respondents said there is. Only 8.5% do not know of any such law.

For most respondents, they consider the municipal government as the one who should be responsible in enforcing the law on child labor (60.4%). Parents (56.4%), barangay officials (45.1%) and the national government (33.5%) were also mentioned as responsible for the implementation of the law.

Table 30. Person/organization responsible in enforcing the law (multiple response)

	Frequencies	Percentage
Parents	185	56.4
Miners' association	77	23.5
Barangay officials	148	45.1
Municipal government	198	60.4
National government	110	33.5
Other	13	4.0
N	328	

In T'boli, it appears that there are less incidences of child labor given that ASGM is already regulated by mining associations. There are ID requirements and stricter hiring procedures before workers are allowed to work; however, the system is not fool proof as there are still reported cases of children or teenagers working in the mines.

J. Formalization of the industry

Forty five percent (45%) of respondents reported that their community had applied to be considered as a "Minahang Bayan" while 32.5% said, their community had been declared as such. However, no such declaration has been made so far according to the Engr. Esteban Martin of the MGB.

There is a false perception that ASGM in T'boli has already been declared as Minahang Bayan. However the declaration has not yet been formally released by the DENR. T'boli miners are invoking a rule that if the Secretary has not returned the application, then the application is already considered approved. This is the reason why ASGM persists in T'boli despite the edict from the DENR ordering the stop of all ASGM operations outside the Minahang Bayan. The MGB insists that only Davao Oriental, Eastern Samar, Quezon, Dinagat Island, and Agusan del Sur have been successfully declared as Minahang Bayan. The rest of the applications are still pending with the DENR.

1. T'boli as an Organized Mining Community

ASGM in T'boli is fairly organized what with its mining associations taking the lead in the mining operations. According to respondents, the MGB has allotted 120 hectares for small scale mining in Barangay Kematu and Barangay Desawo. However, each applicant is only allowed 20 hectares for their operations. The mining associations have imposed rules in the operations of ASGM in cooperation with key government offices. For instance, all miners are now required to be registered and all operators haveto apply for clearances from the municipal LGU. An ID system was also introduced by the PMRB to eliminate the recruitment of underage workers and to identify and set a headcount of all miners engaged in mining. However, this is not a fool proof

system as child laborers have been documented to continue working in ASGM, especially in the mining areas.

Safety regulations have also been set in place, with workers required to wear helmets, boots, and carry flashlights in the tunnels. Order has been set in place as regards work hours in some instances as work hours are now in eight hour shifts, with three shifts in a day. However, there are still those who go over the acceptable eight hour work hours, without over time pay. Profit sharing schemes have also been devised based on the amount of gold haul.

2. Problems in the Processing of the Minahang Bayan Application: Labo and Paracale

The situation is different in Paracale and Labo, which are only starting to apply for their small scale mining permit. For a long time, miners in the two municipalities of Camarines Norte remained unorganized. However, the order from then DENR Secretary Gina Lopez in 2016 forced the closure of many of the operations in Camarines Norte.

This is particularly true in Paracale, Camarines Norte, which imposed the order strictly. Anecdotal data states that the LGU ordered crackdowns in ASGM mining sites, which led to the incarceration and imposition of fines to some miners. Miners who were apprehended were asked to pay for Php25,000 (USD491.75) bail bond. However, if they admit their "crime," they were merely asked to pay for PhP5,000 fine, which a number opted for given the price difference.

The strict imposition of the ban in Paracale led to the closure of mines forcing miners out of their livelihood. However, illegal mining still persisted in some areas, although this has been drastically reduced. This goaded miners to form associations to file their application for the Minahang Bayan.

The Mining Association President said they were caught unaware when the DENR imposed the ban because no one explained to them what the ban was all about. He said that had they been informed earlier, they would have already organized themselves into mining associations. There is also confusion with the definition of small scale mining. The president of the Mining Association in Paracale shares his thoughts on this, "Sa amin po ang magkakabod lang kasi parang kamote mining kung tawagin kami, yung pangkakabod hindi siya small-scale. Ang small-scale po iyan ay isang mamumuhunan, may isang pinansiyal na malaki iyan na kumbaga meron silang kumbaga mag aapply ka talaga ng small-scale, meron kang area na aapplyan para dun sa..." (We don't consider ourselves as small scale miners, we call what we do as *kamote* mining. Small scale mining requires capital from a big financier who has to apply for permit to mine a particular area). Given their understanding of what they do as miners, they were caught unaware when the regulation to apply for a small scale mining permit was imposed on them because what they were really doing was just individual mining for the most. With the small scale permit requirement, they were forced to band together to form a cooperative of miners with due registration with the SEC, DTI, and other government bodies.

In Labo, Camarines Norte, the LGU was not as strict in implementing rules against ASGM. Driven by practicality, the LCE of Labo said that he has not done anything to stop miners from continuing with their work given that for most, this is the principal source of their livelihood.

However, the application for small scale mining permits in Camarines Norte are faced with huge hurdles due to land issues. One of the requirements outlined in the IRR of RA No. 7076 is for the Regional Office of the DENR to ensure that there are no previous rights and applications to the proposed mining areas. Unfortunately, a lot of the areas in Camarines Norte already have existing claim holders (those who have claim to mine underground) and landowners (owners of the land surface). There is also the need to secure the permit of landowner should the landowner and claim holder be two different entities. Both claim owners and landowners should have given their consent to the small scale mining applicants. Some mining organizations, in the meantime, are still hard-pressed at complying with all the documentary and monetary requirements. Thus, the application for small scale mining permit in Camarines Norte will not see immediate resolution. The PMRB has to do decide on the matter, which it has not yet done to date.

Interestingly, among those whose community has not been declared as "Minahang Bayan", majority said they do not know the reason why it was not yet declared as "Minahang Bayan." Other reasons given were because of opposition from the people in the community, they fear that this will lead to destruction of environment and will affect the health of the people, miners are not united, or that the application process is still on-going. Thus, for many, there is really no understanding why Labo and Paracale have not yet been declared as Minahang Bayan areas.

3. Benefits of being a Minahang Bayan

Asked about the benefits when a community is declared as "Minahang Bayan, 40% of respondents noted that this will prevent child labor in mines. Miners' welfare will also be ensured (35.6%), the environment will be protected (26.8%) and gold production monitored by government (17.8%). While the answers are correct, very few were able to respond correctly, which shows that very few have an understanding and appreciation of the benefits of being Minahang Bayan.

Table 31. Benefits of being declared as "Minahang Bayan" (multiple response)

	Frequencies	Percentage
Government will be able to monitor production of gold	69	17.8
Will be able to take care of the environment	104	26.8
Will ensure miners' welfare	138	35.6
Will prevent children from working in the mines	152	39.2
N	388	

The President of the Mining Association in Paracale enumerated the benefits of the Minahang Bayan as follows:

- It will make ASGM mining legal
- Miners will be forced to pay for taxes
- Miners will have an ID for easier identification of workers

- Guidelines will be set in the care for the environment
- It will solve the problem of child labor
- New gold processing methods will be introduced and will result to the elimination of the use of mercury
- Operations will be systematic
- No miner will be incarcerated for illegal mining anymore.

However, there also some who do not understand the benefits of the Minihang Bayan. According to some miner interviewees, they said they were not in favor of the Minahang Bayan because it might actually affect their livelihood through the loss of jobs, which of course is a mistaken notion. Some even think that the Minahang Bayan is another unnecessary requirement by government to earn money from miners. Thus, miners have mixed attitudes towards the Minahang Bayan. Some are averse to it, while others have a tepid attitude towards it since they do not fully understand its full potential and the benefits it could bring them when properly run.

4. Entry of Big Mining Corporations in the Community

In a conversation with a Ban Toxic staff from Camarines Norte, it was mentioned that some big mining corporations are already claim holders of some mining areas in the province. However, they are yet to operate in the community because of problems with land and claim ownership.

Interestingly, majority of respondents are not in favor the big mining companies will enter their community (65%). Main reasons for their opposition is the fear that small miners will be displaced, they fear that big scale mining companies will be using more hazardous technology which will have negative effects on the environment and dangerous to the community.

5. Attitudes Towards Mining Related Issues

Respondents were asked of their level of approval on some issues related to mining, using a scale, 1 (Strongly agree) to 5 (Strongly disagree). Table 35 below summarizes the results and present the percentage that approve of the statement (strongly agree and agree). Mean score for each statement is also presented in the table.

There is high degree of approval on topics such as the responsibility of the parents to decide on whether children should work (87.6%) as well as benefits of ASGM to the community compared to large scale mining (68%). Respondents' sentiments are a bit ambivalent when it comes to government involvement in ASGM. In contrast, they are clear on their opposition regarding child labor, with only 4.6% agreeing to the statement that children aged 15-17 be allowed to work in the mines.

Table 32. Attitude Statements (Strongly agree and agree)

	Approved
ASGM is more beneficial to the community than large scale mining industries run by corporation.	68.0
Local government is doing enough to address the working condition of miners in ASGM	45.4
It is better for government to manage ASGM.	45.1
Government should not involve itself with ASGM.	33.8
The government is giving enough information on the possible effect of mercury exposure on health.	36.1
Employers/Financiers are providing enough information on the possible effect of mercury exposure on health.	21.9
Children 15-17 years old should be allowed to work in the mines.	4.6
The decision for children to work should be the parents' responsibility to make, and not the child's.	87.6
The mines provided many job opportunities in our community.	64.9

A. Conclusions

Demographic Information

1. There is an almost equal proportion of mining and non-mining households in the areas that were part of this study. There is also a very high number of respondents who have relatives working in mining; hence, their familiarity with mining issues in their community. Although half are non-miners, the impact of mining to these people is still considerable as mining affects the economy of the community as many large and small businesses in the area are dependent on the economic status of the mining industry and how this could further stimulate the community economy. Half of the respondents who have ever worked in the mines are female, which means there is a high proportion of women who have worked in the mines. However, the bigger effect on the lives of the non-miner households has to do with the effect of ASGM to the health of the community and the status of the environment especially with the use of mercury for gold processing.
2. Most non-miners are involved in small businesses or farming, while a significant portion are unemployed. They usually have lower income compared to miners. Many are from poor families that cannot make ends meet. Despite not having mining experience, they know someone who works in mining aside from relatives. A significant portion have some awareness of the issues faced by miners in the community.

Work Conditions

3. Because of the informal nature of ASGM, many miners work without contracts, they are paid depending on the gold haul despite the back breaking and long hours of work.

Majority are also without the basic benefits that are accorded to employees such as Philhealth (the percentage of enrolled respondents is better for this), SSS, and Pag-ibig, which also serve as important social protection mechanisms during times of emergencies. They also provide benefits that could alleviate the poverty of individuals. Unfortunately, there is low awareness of the benefits miners can get from Philhealth, SSS, and Pag-ibig. With this, the miners do not demand this basic benefit from their employers. Many of those who are enrolled in these government social protection schemes are paid for by the members themselves of sometimes the national or local government. However, this is difficult to sustain, especially because miners are not always employed or they may have no sources of income to pay for their contributions.

4. The nature of employment remains informal for the most because mining practices have been handed down from the time of the Spaniards. The relationship between financiers/employers remains casual with verbal contracts governing the work of miners. Work also lasts until the money of the financier has dried up and can no longer finance the mining venture; however, over half of the respondents also claim work to be continuous. It was only with government intervention to formalize the industry that the formalization of the industry started to be implemented.
5. Almost 4 in 10 respondents said that payment to them comes in the form of sharing. However, there are also those who received regular salary but were later deducted from their share of the gold haul.
6. The salary of most of the workers is below the food poverty and poverty threshold. This points to the fact that mining is not as lucrative as miners would like to believe. However, most miners are goaded by the possibility of stumbling upon a significant gold find that would allow them to give their families better lives.

Mining Risks and Safety Precautions

7. There is almost universal agreement that mining is a difficult and dangerous profession. This is because miners are exposed to the elements and to dangerous conditions such as landslides, cave-ins, or drowning. They face risks to injuries and death.
8. The dangers of mining are not helped by the fact that a great number of the respondents are not familiar with self-protective behaviors. Many miners are initiated into mining without formal training on how to best protect themselves. There is glaring dearth on information on safety and protective behaviors. Information on safety practices is passed on by fellow miners or superiors but no formal training is conducted especially in Camarines Norte.
9. Interestingly, there is a significant difference in the number of respondents reporting that they wear safety gear between Camarines Norte and South Cotabato. Because miners in T'boli, South Cotabato have already organized themselves into mining associations, they are already able to impose safety standards to the miners. Thus, there are more respondents in the area reporting of having protective gear like helmets, boots, and lamps or flashlights for the tunnels. However, most of the safety

gears are purchased by the miners themselves. There is also no saying if these safety equipment are up to code given that the miners provide it themselves.

Mercury Use

10. DENR AO No. 1997-30 is flagrantly flouted in ASGM communities, with almost half of the respondents saying they have used mercury in processing gold and half of these saying they held mercury in the last 12 months. However, there is lower level of reported mercury usage in South Cotabato because mercury use has been confined in specific ball mill areas and has been prohibited in the mining areas. However, mercury use has not been totally eradicated in T'boli. There are still miners who manage to use this in mining areas that are seldom reached by government monitoring. The use of mercury is more prevalent in Camarines Norte because many of the miners work independently instead of with an association of miners that can monitor and control the use of mercury.
11. The community is also affected by the use of mercury, which would include non-mining households as well. This is because there are gold processing establishment that can be found in residential areas, thereby exposing those who live there to fumes of burning mercury. Mercury is also not properly disposed of: often mercury laced slush is thrown directly thrown into the soil seep into ground water aquifers or bodies of water that could result to its transformation into the lethal methyl mercury a highly toxic substance that can be ingested by fish and consumed by humans.
12. Knowledge on the dangers of mercury does not always translate into protective behaviors. While the miners know of the health risks of being exposed to mercury they still handle mercury and burn mercury with only cloths to cover their mouth and nose. Most miners think that the use of mercury cannot be eschewed because this is the cheapest and most efficient way to separate gold from mercury. However, the experience in South Cotabato shows that mercury use can be confined in specified areas or other technologies could be used to process gold.
13. Respondents believe that it is the responsibility of individual players (financier, miners' association, government) to dispose of mercury; they fail to realize that it should be a concerted effort among different stakeholders. But even with the awareness of who is responsible for the disposal of mercury, without the proper disposal technologies and protocols, this will be impossible to do.
14. There are significant numbers of respondents who are not aware of the effects of mercury to the environment; however, there are also those who know its dire environmental and health impact.
15. Mercury use persists because of the absence of alternative technologies to separate gold from ore. Miners think that this is still the cheapest and most efficient tool to recover gold. If there are alternative machines, the most efficient machines that will enable the recovery of gold are not available here or they are very expensive. There is also no concerted effort among various government branches to monitor and stop the use of mercury, there is no political will among LGU officials, there are no alternative livelihoods if the mercury ban is imposed, etc.

Health Status

16. Majority have fair to good health. Those who were ill sought treatment from the health center and hospitals. Most of them spent for their own hospitalization and medical procedures.

Social Protection Mechanisms

17. Various social protection mechanisms are in place in the communities. Around 3 in 10 respondents are enrolled in the government's 4Ps program despite the fact that many of the respondents' income fall below the poverty and food poverty threshold. In the absence of government help, they rely on formal and informal channels for their loan needs. Most borrow from microfinance companies while others borrowed from relatives and neighbors. Access to low interest loan is important to protect the families from being pushed into further poverty.
18. There is a very small percentage of respondents who have received vocational training and livelihood assistance from the government. However, some interviewees are jaded with such training because they fail to consider the need for capital of recipients. Thus, miners who receive such training merely go back to their old profession.
19. There was no safety net provided for miners from Paracale who lost their job with the imposition of the ban to small scale mining.

Child Labor

20. Child labor in mining persists in both areas. However, there is the impression that the problem is much lesser in South Cotabato given the presence of mining associations. Child labor persists because of poverty and the desire to help parents. Children look at the monetary returns that will keep food on their family's table as more important than preparing for their future through the completion of school. They see work as more practical than attending school because of the immediate returns that will contribute to their children's survival.
21. Children are initiated into mining very early on. Some report of seven year olds who tag along with their parents in the mines and get initiated into mining work. Most though are already in their teens. With the early exposure, mining has become an acceptable future for some. But more than just exposure, it has to do with their feeling of responsibility over their family's welfare. With limited choices in their community for other jobs, the children get involved in mining. Some children forego their formal education, which further limits other prospects in life.
22. Adults believe children cannot be stopped from working especially when teenage children have decided for themselves to work in ASGM; hence, children are given autonomy to make decisions for themselves. This is because stopping them would mean that the family will have less food on their table.
23. Reported tasks assigned to children in the mines involve back breaking and dangerous work. They are asked to pan for gold, which exposes them to mercury, hauling ore which requires them to carry heavy loads, and ore processing such as hammering ore

which poses dangers when rock projectiles hit their eyes. Because of the informal nature of work, there are no policies governing work hours or safety. The experiences of adults are the experiences of children at work.

24. They are vulnerable to be cheated by adults from their payments by paying them less than their adult counterparts; however, there are also those who receive equal share as adults do.
25. The child labor situation in T'boli is better as ASGM is regulated by mining associations and require stricter hiring procedures. Workers are also required to wear identification cards. However, there are still those who get away by faking their age so improved standards in verifying the age of workers should be enforced.
26. Many child laborers stop from school. The problem is now better according to some respondents in both areas with the stricter implementation of the child labor law. However, there are still exceptions to the rule as children have been observed to be still working in the mines. There is ALS, but not all take the opportunity to finish school through alternative means. Children who participated in the FGD said they prefer to finish school through the formal system and that they are working in ASGM to save money for school.
27. Adults believe children should be in school, but when faced with the reality of poverty and hunger, the practicality of working in ASGM takes over. What seems to work in stopping child labor though, is stricter enforcement of the law that will involve the collaboration among parents, school, LGU officials, and mining associations.

Mining Associations

28. Small scale miners are now required to apply for a permit to engage in mining in their communities. While T'boli has already set up an organized small scale mining industry courtesy of its mining associations, the area has yet to be fully declared as Minahang Bayan. Officially, there are only five existing Minihang Bayans from Luzon to Mindanao. However, T'boli has already complied with the requirements. They are just awaiting the confirmation from the DENR. However, the potential of mining associations and the Minahang Bayan to help in organizing the industry, enforcing labor and safety standards, controlling child labor, arresting pollution can already be seen in T'boli especially if the mining associations are trained and empowered to organize ASGM better. On the other hand, Camarines Norte has just recently organized Mining Associations. They have also recently filed application for Minahang Bayan. However, the mining sites are embroiled in land ownership and land claimant disputes so the Minahang Bayan application will not be issued any time soon. Mining associations have already petitioned the DENR to lift the mining moratorium to enable them to pursue mining while awaiting for their permit as this has already started to affect their livelihood.
29. Many miners are not aware of the benefits of ASGM communities being declared as Minahang Bayan, especially the benefits that will redound to their welfare as workers. The Minahang Bayan will make their mining operations legal, it will enable them to receive just wages and improve safety practices, the environment will be protected, and children will be guarded from child labor. The current system in South Cotabato

serves as a preview of what could be accomplished in Camarines Norte. However, South Cotabato still has room for improvement in protecting the welfare of workers, children, the community, and the environment,

A. Recommendations

Fast-tracking the Minahang Bayan Application and Empowering the Minahang Bayan

1. A stronger lobby should be waged for the DENR to fast track the approval of the Minahang Bayan application of Paracale and Labo, Camarines Norte as this has negative consequences on the livelihood of miners as well as the community. Assistance should be given in the completion of the application requirements of Labo and Paracale should the Mining Associations not have accomplished all application materials and gathered all requirements properly. The PMRB, MGB, and DENR should be pressed to comply with the processing time frames indicated in the IRR of the Revised IRR of RA No. 7076. The DENR should also be pressed to fast track the release of the result of the application of T'boli for the Minahang Bayan status.
2. Once declared Minahang Bayan, the work of formalizing the small scale mining industry in the three areas could begin, especially with the municipalities of Labo and Paracale, Camarines Norte. The formalization of ASGM in these areas will pave the way for better labor and safety practices. Mining ventures can be monitored by mining associations for labor standards, incidences of child labor, and mercury usage, etc as the mining associations become answerable to the LGU, PMRB, MGB, and the DENR.
3. The support of the community for the Minahang Bayan should harnessed. People's lack of understanding of the benefits of the Minahang Bayan or the indifferent or antagonistic attitude towards should be addressed to ensure better support from the community. The community, particularly miners, should be made to understand how the Minahang Bayan can benefit them and their community. On the other hand, the LGU should be made to understand how the Minahang Bayan can be harnessed to help protect community members and lead to the better development of their community economy.
4. The formalization of the industry should also involve empowering the mining associations through training so that it could collaborate with government in enforcing labor standards, curbing child labor, and improving the welfare of miners.

Improving Social Safety Nets for miners and the community

5. Miners should be enrolled in the SSS, Pag-ibig, and Philhealth by employers and shoulder their monthly contributions. These social protection mechanisms are important mechanisms to protect the miners from emergencies and unexpected economic shocks through affordable loans and through essential benefits. One of the campaigns that the Caring Gold Project should stage would be for increased membership to these government social protection mechanisms.

6. The LGU also has a role in ensuring that community members, especially the most vulnerable are enrolled in these government insurance systems. People should be made aware of the benefits of these social safety nets and how this could prevent them from being entrenched into further poverty.

Curbing the Use of Mercury

7. Better gold processing technologies should be provided by the local government as well as the mining associations to mitigate the use of mercury. Lobby should be staged for LGUs or even national government to set up processing plants that use of more efficient (in terms of recovering gold) and safer alternative gold processing technologies. This will have important implications in stopping the use of mercury in ASGM, in protecting the health of community members, and in protecting the environment. Machines that are more efficient in separating gold from ore will also result to higher profits for workers.
8. Knowledge on the ill effects of mercury to the health and the environment does not necessarily translate to protective behaviors. While knowledge campaigns are good to increase awareness as this also increases the chances of better decisions for miners, this will not work if other important variables are not set in place. Campaigns against the proper disposal of mercury will only work if the communities are provided detailed protocols for and training in the proper disposal of mercury and if technologies are provided for the safe disposal of mercury. They should also be provided with better protective gear to safeguard them from mercury exposure.
9. The reach of the information campaigns on mercury use and the harmfulness of mercury should be expanded to include the whole community because the community's health at large is also at risk with the rampant use of mercury in mining.

Improving Safety Practices in ASGM

10. Safety training should be required by mining associations before miners are hired. Training modules can be developed that will be delivered by mining associations to miners. Only those who have received certificates of completion for safety training will be allowed to work in the mines. The safety training should be built into the hiring process of miners. Follow-up training should also be done periodically to ensure that their knowledge and protective practices are adequate.
11. There should also be proper vetting of safety gears used by miners. It should be ensured that the safety gears conform to acceptable international standards.
12. The community of non-miners has a stake in improving mining practices in the community because 1) many of them have relatives in mining, 2) they are affected by the ups and downs of the mining business in their community, and 3) they are affected by the environmental impact of mining. Given this, community members should be included in advocacy work in improving conditions in mining.
13. Livelihood programs provided by DOLE and other partner agencies for miners should be well thought out, which means that in planning these programs the following sustainability issues should be considered: the potential loss of income of the miners

if they decide to adopt another livelihood activity for their family (this is important because miners will not go into another livelihood activity if they know this will be less profitable than mining) and the source of capital to run their new livelihood activity.

Collaborative Approach to Improving ASGM Conditions

14. The success of monitoring the ASGM industry rests on the collaboration among different national government agencies and local government units. Because LGUs are the ones who have the reach in the community, they should be mobilized to assist in monitoring and enforcing small scale mining laws in the communities. The success of this is largely hinged on the awareness and commitment of the LCE to small scale mining issues because only when he adopts this as a program can there be better monitoring and implementation of labor and child labor laws in ASGM communities.
15. The FFW expressed its willingness to take on child labor and working conditions as part of their advocacy program.

Stopping Child Labor

16. Barangay plays a big role in child protection especially in the prevention of child labor. However, the lack of staff or the lack of initiative, sometimes because they are financiers themselves, barangay officials turn a blind eye on the problem of child labor. The BCPC and LCPC can act as important monitoring structures to prevent child labor in the community. Thus, there should be better coordination with and better involvement of BCPCs and LCPCs in ensuring that they do their tasks in the prevention of child labor. Barangay volunteers should also be organized to help in monitoring child labor in communities.
17. A local referral system should be established involving social workers, schools, NGOs, and other key stakeholders to ensure that children found to be working in ASGM will be referred to proper agencies for help.
18. The anti-child labor campaign should target cultural practices of communities and should tap Filipino values of care and protection for children. When cultural practices are tapped, there are more chances of people changing their stance towards making their children work in ASGM. Messages promoting the importance of education over the temporary gains of work should also be sent to enable children to realize the importance of education over work at their age.
19. ECOP's suggestion to consider the lowering of the age of children being allowed to work to 15-17 should be carefully taken into account. There are kinds of work in the community that will enable children to work and go to school at the same time, without feeling the same exhaustion as when they work for ASGM.

Harnessing the Help of Mining Associations

20. Mining Associations can become members of ECOP, which will enable them to enjoy training on work safety and other similar training conducted by ECOP. Small scale miners can also be the object CSR projects of partner agencies of ECOP, especially projects that are related to health and poverty.