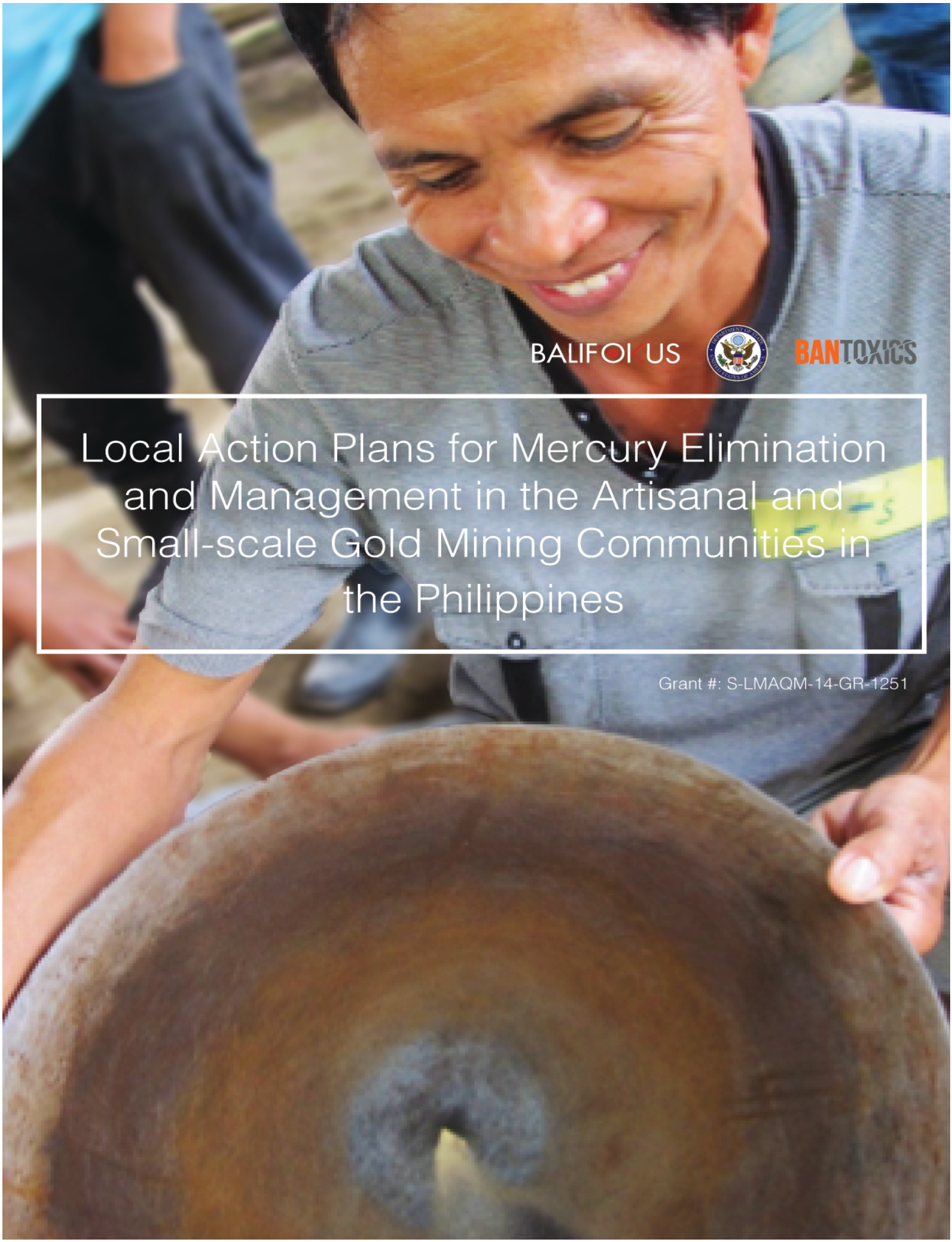

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BANTOXICS

Local Action Plans for Mercury Elimination and Management in the Artisanal and Small-scale Gold Mining Communities in the Philippines

Grant #: S-LMAQM-14-GR-1251

This document, "*Reducing Mercury Use in the Artisanal and Small-scale Gold Mining Sector in the Philippines: Local Action Plans of Camarines Norte, South Cotabato and Compostela Valley*" is prepared by BAN Toxics, Inc.

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EXECUTIVE SUMMARY

Small scale gold mining in the Philippines has been practiced long before the colonization of the country. The proliferation of small-scale gold mining activities is considered as a major contributor to the total gold production of the country, and is bolstered by the continued increase in the price of gold and the pressure for alternative source of livelihood in the rural areas.

There is now an estimated 500,000 small-scale miners in the Philippines, most of whom have no formalized education in mining and no concessions. The socio-economic conditions in rural artisanal and small-scale gold mining (ASGM) communities are characterized by a complex set of development challenges that are closely linked to health, culture, environmental and human security concerns—difficulties shared by three ASGM provinces in the country, Camarines Norte, South Cotabato and Compostela Valley.

One of the unsustainable and dangerous practices in ASGM communities in the Philippines is the indiscriminate use of mercury in the extraction of gold. Mercury is a highly-toxic chemical that easily persists in the environment. The popularity of employing mercury in the extraction of gold can be attributed to the fact that mercury is cheap, easily accessible, and very convenient to use with immediate results. Results of the mercury inventory conducted by BAN Toxics found that miners use an average of 19.2 g mercury to process a gram of gold. A huge portion of this is released to the environment as emissions during smelting, or releases in the mine wastes.

While there are efforts at the national level to prohibit the continued use of mercury in ASGM operations, these are not successfully cascaded to the local level due to variety of reasons. Developing local action plans (LAPs) for the phase-out of mercury use are thus necessary to ensure that the country can fulfil its obligations to the Minamata Convention on Mercury once it comes into force.

Various stakeholders collaborated with their respective local government units (LGUs) to develop plans to phase out mercury use in ASGM operations, and to identify strategies for the environmentally sound management of mercury wastes. While there is no silver bullet that can adequately address the complex issues surrounding mercury use ASGM in the Philippines, the communities have identified mechanisms and potential solutions to various concerns. These include:

a. Reduction and elimination mercury use in ASGM. Intensifying the campaign against the worst kinds of ASGM practices through IEC campaigns; creating local task forces for the reduction and elimination of mercury and mercury compounds; and adopting mercury-free processes through partnerships with the national government, academe and NGOs.

b. Development/ review of local policies and ordinances. Developing local policies to support the reduction and elimination of mercury from ASGM, as well as the management of mercury wastes; and introducing mercury-free certifications for mining operation registrations.

c. Strengthening institutional and local capacities. Engaging with technical experts to fulfil capacity-building needs, particularly on the handling, storage and disposal of mercury; and integrating chemicals management concepts into the education curriculum.

d. Promotion of safe handling and storage. Developing guidelines for safe handling and storage of mercury and mercury compounds at the local level.

e. Establishment of environmentally sound short-term storage facilities. Seeking for government support for the construction and establishment of interim storage facilities.

Continuous collaboration between stakeholders and local and national governments was also identified as critical in addressing the social, health and environmental costs of ASGM. These will enable communities to successfully implement their LAPs and to realize their objective of a mercury-free society.

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LIST OF ABBREVIATIONS

ASGM	Artisanal and small-scale gold mining
BHW	Barangay healthcare worker
BIMP-EAGA	Brunei- Indonesia- Malaysia- Philippine East ASEAN Growth Area
CBMS	Community-based monitoring system
CCO	Chemical Control Order
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DILG	Department of Interior and Local Government
DOH	Department of Health
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
ECC	Environmental Compliance Certificate
EMB	Environment Management Bureau
EO	Executive Order
GEF	Global Environment Facility
GEUS	Geological Survey of Denmark and Greenland
IEC	Information, education and communication
ILO	International Labor Organization
IPHO	Integrated Provincial Health Office
LAP	Local action plan
LCE	Local chief executive
LGU	Local government unit
LSM	Large-scale mining
MDRRMO	Municipal Disaster Risk Reduction and Management Office
MENRO	Municipal Environment and Natural Resources Officer
MGB	Mines and Geosciences Bureau
MHO	Municipal Health Office
MIA	Minamata Initial Assessment
MO	Municipal Local Government Office
NAP	National Action Plan

NBI	National Bureau of Investigation
NGOs	Non-government organizations
NSCB	National Statistical Coordination Board
NSP	National Strategic Plan
PEMO	Provincial Environmental Management Office
PENRO	Provincial Environment and Natural Resources Office
PMRB	Provincial Mining Regulatory Board
PNP	Philippine National Police
PPDO	Provincial Planning Development Officer
SOCSARGEN	South Cotabato, Saranggani, General Santos
TESDA	Technical Education and Skills Development Authority
TMC	Tribal Mining Corporation
UP	University of the Philippines

BACKGROUND

The Philippines is host to some 500,000 individuals[1] and their families whose main livelihood is derived from extracting gold in ASGM sites found in more than 30 different provinces around the country. Among these small-scale miners, 75% are engaged in subsistence mining, 15% are small individual or family businesses, while the remaining 10% are established commercial mining firms[2]. The informal gold miners and processors in the country's ASGM communities often are displaced agricultural workers and fisher folk who have very few options in terms of alternative livelihood, driving them to resort to rudimentary gold mining activities for income generation in the rural communities where they live. In 2009, studies have suggested that around 18,000 women and children in ASGM communities[3] are in some way involved in gold mining activities. Using the same ratio, the estimated number may have already reached at least 30,000 at present. A report released by the International Labor Organization (ILO) in 2011 has estimated the number of children working in mines and mining offices for all types of minerals in the Philippines to roughly 20,000[4]. Overall, ASGM in the Philippines is believed to directly and indirectly support the livelihood of 2.3 million people.

Based on consolidated resource inventory data provided by mining companies in the country, the Philippines reportedly has an estimated gold deposit of around 5 billion metric tons[5] distributed to 40 different provinces. The country is ranked third among countries in the world with the highest density of deposits per square kilometer land area. On average, ASGM contributed to an estimated 75% (~25 MT/year) of the annual gold production[6] of the Philippines from 2000 to 2009. However, this volume could be higher given that most of small-scale gold mining operate without a license, and some of their production not reported.

In recent years, data from the Mines and Geosciences Bureau (MGB) indicated a noticeable decrease in gold production from the ASGM sector, 36% drop in 2011, 94% in 2012, and 39% in 2013. This sudden drop coincided with the government's policy reform initiatives to strengthen the implementation of laws

[1] Philippine Extractive Industries Transparency Initiative (EITI) Country Report, Volume 2, 2015
[2] Mining Industry Report, University of Notre Dame, Business on the Frontlines IV, 2012
[3] International Labor Organization. (2016). *Convening Stakeholders to Develop and Implement Strategies to Reduce Child Labour and Improve Working Conditions in Artisanal and Small-Scale Gold Mining*. Retrieved from http://www.ilo.org/manila/projects/WCMS_517531/lang--en/index.htm
[4] Ericta, C. (2011). *2011 Survey on Children* [powerpoint presentation]. Retrieved from http://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-manila/documents/meetingdocument/wcms_184097.pdf
[5] Department of Environment and Natural Resources. (2012). *National Strategic Plan for the Phase-out of Mercury in Artisanal and Small-scale Gold Mining in the Philippines*. Retrieved from http://wedocs.unep.org/handle/20.500.11822/13090
[6] United States Geological Society. (2000-2009). *Gold Statistics and Information.* Retrieved from https://minerals.usgs.gov/minerals/pubs/commodity/gold/index.html#myb

governing small-scale mining such as the ***Executive Order 79***[7] that aims to harmonize all mining laws in the country. These efforts by the government to impose stricter measures have inadvertently pushed the informal miners outside of the government radar, thus promoting illegal trade and other unsustainable practices such as the use of mercury and the proliferation of several forms of social and economic injustices in the form of (1) gender related inequalities, (2) human rights violations, and (3) inadequate child protection among other issues relating to human and environmental insecurities.

The socio-economic conditions in rural ASGM communities present a complex set of development challenges that are closely linked to health, culture, environmental, and human security concerns. Inadequate infrastructure, weak forms of social services, and the absence of economic opportunities are just a few of the reasons that promote the proliferation of unsustainable mining practices. With grave repercussions to both health and the environment, these practices that fulfill an immediate subsistence need is not only short-term in nature but also create an additional barrier that prevents these communities from lifting themselves out of poverty. Clearly, there is a need to re-examine the policy and regulatory framework surrounding the ASGM industry and to identify stronger implementation strategies and approaches.

COMMUNITY PROFILES

The Philippines is situated along the Circum-Pacific Rim of Fire where volcanic activities and plate convergence led to the deposition of sizeable amounts of minerals, both metallic and non-metallic, within the country's borders. These large deposits have placed the country in the world mineral map as the 5th country in the world with the highest overall mineral deposits, ranking 3rd in gold, 4th in copper, and 5th in nickel[8]. At present, there are around 40 provinces in the country where ASGM operations are present including Camarines Norte, South Cotabato, and Compostela Valley.

Camarines Norte

Camarines Norte is found on the northwestern coast of the Bicol peninsula which forms the southeastern section of Luzon, the largest island in the Philippine archipelago. The province is characterized by rolling hills and mountains in the interior areas, and fertile plains and valleys along the coast.

[7] Official Gazette of the Philippines. (2012). *Executive Order No. 79.* Retrieved from http://www.gov.ph/2012/07/06/executive-order-no-79-s-2012/

[8] DENR. (n.d.). *Mineral Resources.* Retrieved from http://www.denr.gov.ph/news-and-features/latest-news/16-mineral-resources.html

ASGM activities in Camarines Norte is concentrated in the municipalities of Jose Panganiban, Labo and Paracale, where thousands of small-scale miners depend for subsistence. Based on the 2013 Community-based Monitoring System (CBMS) compiled by the Provincial Planning and Development Office (PPDO) of Camarines Norte, these municipalities have a combined population of 189,625 individuals, or about 35% of the province's entire population. Poverty incidence is high among the municipalities, with 67.9 and 52.27% of the households in Jose Panganiban and Labo living below poverty thresholds, respectively.

The province hosts the Paracale- Jose Panganiban gold mining district, recognized as one of the Philippines' richest and oldest mining sites. Its estimated metallic mineral reserves (gold, silver, iron, lead, zinc, iron lump, bull quartz and iron in laterite) amount to 135.27 million metric tons, with Jose Panganiban hosting three of the five major gold veins in the gold district.

The people of Paracale and Jose Panganiban (formerly Mambulao) have been mining for gold long before the colonial period. The rich gold mining history of Camarines Norte is characterized by the industry's dependence on outside investors who come to the area with their capital, open the mines, employ locals and leave the mines after raking in huge profits. For instance, the major Spanish mines held by Paracale in the 1750s to 1800s eventually closed in the 1790s, which led people to live of desultory gold washing, fishing and trade. Mambulao then became the new mining center, attracting migrants from nearby places. Fifteen years later, the Mambulao mines were closed, though haphazard gold washing was still done by the female residents.

A 1992 study conducted by the National Statistical Coordination Board (NSCB) showed the contribution of Camarines Norte to gold production in the country. Of the 7,773.33 kilograms produced from small-scale gold mining and panning activities all over the Philippines, 15.9% comes from the Bicol region, with Camarines Norte contributing the bulk of the production.[9] The province also housed several large-scale mining (LSM) corporations such as the Bulawan Mineral Resources Corporation, Pargum Johson Gold Mining Corporation and Trans-Asia and Unidragon Mining and Development Corporation. Reported gold production of these LSM companies within the region has reached PHP 18 billion pesos by 2012.[10]

[9] National Statistical Coordination Board. *Estimation of Production, tons mined and tailings generated by the small-scale gold mining activity.* Page 11. Retrieved from http://www.nscb.gov.ph/peenra/results/mineral/SSMining.pdf
[10] Mines and Geosciences Bureau- Region V. *Metallic mineral production value rose by 46.78% in Bicol region.* Retrieved from http://www.mgb5.net/stat_release_CY2012vsCY2011_final.pdf

Small-scale miners in Camarines Norte employ different methods to extract ores and gold. Some collect alluvial deposits through panning in rivers and streams. Underground mining, which involves digging of shafts up to 150 feet deep below the surface in search of gold veins, has also become widespread. Risky underwater mining operations still exist, which involve the extraction of gold-bearing ores beneath muddy rice fields and underneath the sea or river. Under this method, miners use a hose that is attached to a compressor which provides artificial air, enabling them to breathe underwater for a long time.

A 2007 study conducted by the Geological Survey of Denmark and Greenland (GEUS) revealed that mining communities in Camarines Norte emit 5 metric tons of mercury annually. Mercury and cyanide pollution of important water bodies have brought detrimental effects to the fisheries industry, an equally important source of livelihood in the area. In a mining village in Jose Panganiban, flooding has become a constant occurrence during rainy seasons, which the local residents attribute to the accumulation of mine wastes that were indiscriminately dumped in rivers and streams. Lands previously devoted to agriculture have likewise been turned into dams or dump sites for mine tailings.

South Cotabato

South Cotabato is located in the southern part of Mindanao. Bounded by the provinces of Sultan Kudarat and Saranggani and the city of General Santos, its main access to the sea is through the Saranggani bay. The province is generally flat, dotted with some hills and mountains.

The province belongs to one of the country's fastest growing development clusters, known as SOCSARGEN (South Cotabato, Saranggani and General Santos). The cluster serves as a gateway for the Brunei-Indonesia- Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA), and home to an international standard airport and thriving fishing and international shipping industries.[11]

South Cotabato is rich in mineral resources, especially in the mountainous areas in the municipalities of Tampakan and T'boli. The exploration activities of large-scale mining companies in the former revealed an indicated reserve of 2.2 billion tons of copper, 2.4 million tons of inferred gold and 2

[11] South Cotabato Provincial Government. (n.d.). *General Information*. Retrieved from http://southcotabato.gov.ph/general-information/

million tons of iron.[12] On the other hand, Cadan Resources Corp., a Canadian mining company, has disclosed gold deposits of 1.1 million ounces of gold and 3.3 million ounces of silver in T'boli.[13]

Majority of the lands in T'boli are recognized as ancestral lands, with the first ASGM operations established by a family belonging to an indigenous peoples' group. The Tuan brothers established the T'boli Small-scale Mining Association in 1989, and eventually, the Tribal Mining Corporation (TMC)—a portion of which is sold to Canadian and Australian investors. TMC operates in an 84-hectare area in barangay Kematu, which also hosts several small-scale mining operations.

There are generally two kinds of ASGM miners operating in T'boli, the traditional (artisanal) miners, and the SSM groups/ cooperatives. The former is normally a family enterprise and operates seasonally. The miners operate in pocket mines and process minerals in processing plants set up in their own backyards or just adjacent to the mines themselves. In contrast, modern SSM cooperatives are registered associations with a more complex organizational set-up. They often have mechanized processing plants and have a bigger number of employees compared to traditional mining.

ASGM communities in T'boli are distributed among 4 barangays with a total population of about 20,000 individuals based on 2015 estimates. As of 2012, there are reportedly 5,000 miners operating in the area. In support of efforts toward formalization, the Provincial Mining Regulatory Board (PMRB) of South Cotabato identified 21 has of mining area in T'boli as the People's Small-Scale Mining area, locally referred to as the "*Minahang Bayan*". At present, the "*Minahang Bayan*" consists of 200 existing mine tunnels supported by 84 operational ball mill processing facilities.

ASGM is an important source of livelihood for the communities. For instance, about 85% of the mine workers in barangay Kematu are engaged in the small-scale mining operations, with large-scale companies employing the remaining 15%. However, unsustainable practices in the sector such as the use of mercury in gold extraction have led to major environmental threats. While the PMRB has banned amalgamation operations in the province, an average of 4 kgs of mercury is estimated to be purchased annually by a miner and used either during the ore milling process or during panning of the crushed ores. Despite these, there have been major successes in the combat against mercury through the promotion of mercury-free processes and IEC activities.

[12] South Cotabato Provincial Government. (n.d.). *Mineral Reserves.* Retrieved from http://southcotabato.gov.ph/mineral-reserves/
[13] Sun Star (27 February 2013). Bigger gold deposits found in South Cotabato. *SunStar Davao.* Retrieved from http://www.sunstar.com.ph/davao/business/2013/02/27/bigger-gold-deposits-found-south-cotabato-270410

Compostela Valley

Compostela Valley, or Davao de Oro, is a province in the Philippines located in the Davao region in Mindanao. The municipality of Monkayo in Compostela Valley hosts the gold-rich barangay of Mt. Diwata, popularly known as “Diwalwal”, a 1,000-m high range known known for its rich gold ore deposit.

According to the Department of Environment and Natural Resources (DENR), the 5,000-ha mountain area has an estimated USD 1.8 billion worth of gold reserves that remain untapped. In the 1980s, indigenous peoples discovered high gold deposits in the rivers of Mt. Diwata, triggering a gold rush in the 729-ha area in 1982. Since then, it has become a gold mining community mostly comprised of small-scale operations. The onset of ASGM caused an influx of population, which included government and private military forces. Private mining financiers came to the area with their own set of workers, giving less opportunities for indigenous peoples to engage in ASGM. Currently, it has approximately 9,065 miners, 266 ball mills and 26 tunnels, with an estimated annual mercury emission of 4,000 kgs.

Mining income is often 2-4 times higher than the income earned from agricultural activities in the region. However, this income is not fixed and depends on how productive the tunnel is. Some laborers work in the mines full time, while others are engaged seasonally. Daily wage for laborers ranges from PHP 250 to PHP 500, while financiers, most of whom are mine owners and processors, earn PHP 15,000 to PHP 100,000 a month.

ASGM operations in Compostela Valley are plagued with social, technical and institutional issues. For instance, a study conducted in 2014 revealed that child labor is present in one out of five household in the area.[14] Baseline assessment conducted by BAN Toxics show that 287 young adults (15 to 18 yrs old) and 2,412 children (<15 yrs old) are engaged in mining activities to help augment their family’s income.

Moreover, the indiscriminate use of mercury in ASGM operations in Mt. Diwata contributes to long-term environmental and health problems. In 2000, a study on the communities affected by mining operations in Mt. Diwata showed high levels of mercury contamination which affected aquatic life in

[14] Capistrano, Z. C. (2016, March 3). Group pushes for independent probe on Mt. Diwata tragedy. *Davao Today*. Retrieved from http://davaotoday.com/main/environment/group-pushes-for-independent-probe-on-mt-diwata-tragedy/

Naboc river.[15] In addition, the Davao Regional Office of the Department of Health (DOH) in 2005 estimated that 13.5 metric tons of toxic mercury flow annually through rivers into Davao gulf. Examination of fish samples from Davao Oriental, Davao del Sur and Davao City markets also revealed higher mercury contents than the allowable limit of 0.3 microgram per gram.

One of the unsustainable and dangerous practices in ASGM communities in the Philippines that require urgent attention is the indiscriminate use of mercury in the extraction of gold. Mercury is a highly-toxic chemical that easily persists in the environment[16]. It is a potent neurotoxin in its many forms and can cause neurological damage affecting behavior and cognitive faculties, mental disorder, infertility, kidney damage, and respiratory failure[17]. In its organic form (methylmercury), it bio-accumulates through the food chain and ends up being stored in the fat tissues of humans causing neurological damage and impaired neurological development in infants and young children, causing damage even as early as during fetal development[18].

The practice of employing mercury in the extraction of gold has been in existence since ancient times, and its popularity among ASGM miners can be attributed to the fact that mercury is cheap, easily accessible, and very convenient to use with immediate results[19]. Even with the emergence of strong scientific evidences supporting the serious negative health and environmental impacts brought about by exposure to mercury and its compounds mostly to vulnerable groups such as women and children, many of the gold miners and processors are still hesitant to accept alternative gold-extraction methods. Because illegal mercury and gold trade is still generally unchecked, existing national and local policies that promote the prohibition of mercury use in ASGM such as ***Republic Act 6969*** or the **Toxic, Hazardous, and Nuclear Wastes Control Act of 1990** with the corresponding ***DAO 97-38***[20] for the **Chemical Control Order (CCO) for Mercury and Mercury Compounds** have been critically ineffective

[15] Appleton, J., Weeks, J., Calvez, J. and C. Beinhoff. (2006) Impacts of mercury contaminated mining waste on soil quality, crops, bivalves, and fish in the Naboc River Area, Mindanao, Philippines. *Science of the Total Environment, 34* (2-3), 198-211.
[16] National Atmospheric Deposition Program. (2016). *The Mercury Problem.* Retrieved from http://nadp.sws.uiuc.edu/MDN/why.aspx
[17] World Health Organization. (2017). *Mercury and Health.* Retrieved from http://www.who.int/mediacentre/factsheets/fs361/en/
[18] US Environmental protection Agency. (2016). *Health Effects of Exposure to Mercury.* Retrieved from https://www.epa.gov/mercury/health-effects-exposures-mercury#methyl
[19] Bailey, M. & Bernaudat, L. (n.d.). *Global extent of mercury use in Artisanal and Small-Scale Gold Mining and why is it a problem? [powerpoint presentation*. Retrieved from https://wedocs.unep.org/bitstream/handle/20.500.11822/12831/1_2_Mercury_Use_in_ASGM_and_Health_Effects.pdf?sequence=1&isAllowed=y
[20] DENR. (1997). *Chemical Control Order for Mercury and Mercury Compounds.* Retrieved from http://119.92.161.2/portal/Portals/40/DAO%201997-38.pdf

in controlling mercury emissions to the environment from this sector. Based on extrapolation of available data, estimated mercury emissions[21] from ASGM is the Philippines is 95 tons in 2010.

In 2012, because of the growing global concern on the negative impacts of mercury and mercury compounds to human health and the environment, nations around the world, including the Philippines, signed the Minamata agreement to put forward global and national interventions to curtail the harmful effects of the manufacture, importation, use, and trade of mercury, mercury compounds, and devices that contain them. Yet to be ratified by the Philippine Senate, the agreements in the ***Minamata Convention***[22] is expected to further strengthen the government's strategy outlined in the **Philippine National Strategic Plan for the Phase-out of Mercury in ASGM in the Philippines**[23]. ***Executive Order 79*** signed by the Philippine President in 2012 was also the first time the use of mercury was out rightly prohibited in written form in any mining law.

MERCURY USE BASELINE SCENARIO

The most widely-used method of extracting gold from its ore used in ASGM in the Philippines is the process called amalgamation. Here, elemental mercury is combined with the crushed ore to extract the gold. Gold has a high affinity toward mercury, essentially enabling itself to be liberated from the other parts of the ore and forming an amalgam. This amalgam is later squeezed and taken to the final step called firing. This involves smelting of the amalgam to vaporize the mercury, leaving behind the valuable gold. This is considered as one of the most significant sources of mercury pollution in air coming from ASGM. Excess materials called tailings are, in certain instances, collected and further processed using cyanidation in nearby large-scale facilities to extract more gold. The mercury amalgamation process can recover 40% of gold from the ores while the cyanidation process will increase recovery up to 60%.

A relatively-large amount of mercury is used during whole-ore amalgamation which is not only wasteful but is also poised to release a significant amount of mercury into the environment. Large amounts of mercury are directly added to the drums in the milling stations in the tune of 1.5 to 149 grams of mercury in order to produce one gram of gold. Mercury in excess of what is stoichiometrically needed for the amalgamation process is lost in the milling / crushing process and is left as metallic waste in the fine sands of the tailing ponds.

[21] World Mercury Inventories (2008 and 2013 report) and data from DENR-EMB
[22] UNEP. (2017). *Minamata Convention on Mercury.* Retrieved from http://mercuryconvention.org/Convention/tabid/3426/Default.aspx
[23] DENR. (2011). *Philippine National Strategic Plan for the Phase-out of Mercury in ASGM in the Philippines.* Retrieved from https://wedocs.unep.org/bitstream/handle/20.500.11822/12958/Philippines_NSP_experience.pdf?sequence=1&isAllowed=y

Several studies have estimated the annual release of mercury from ASGM, ranging from 25 tons in the early 1990s to 70 tons in the late 2000s. Others have reported varying figures. This lack of consistency in the reported mercury releases and emissions reveals an important gap in terms of monitoring mercury use. In 2017, the DENR will embark on its Minamata Initial Assessment (MIA) and gather data on mercury inventories using the UN Environment Toolkit version 2.

BAN Toxics, in its capacity, has also conducted a study that attempted to measure mercury releases and emissions. The result of the study was submitted for publication in the 2017 volume of the journal, Japanese Society of Geo-Pollution Science, Medical Geology, and Urban Geology. Using a method called Substance Flow Analysis, applied within system boundaries defined by cradle-to-gate stages of mining operations, the amounts of mercury releases and emissions are calculated based on the mass balance principle. For this study, actual mass balance measurements were taken in the ASGM operations using data collected, by directly measuring the amount of mercury added and recovered in each step of the gold extraction process. The calculated difference between the mercury input and the amount recovered was considered equivalent to the mercury loss in the system, which can either be emissions to air or releases in the water or land (i.e., with the tailings)[24].

Data in Annex 1 show that miners use an average of 19.2 g mercury to process a gram of gold which is six times higher than the default input factor prescribed in the UNEP toolkit. However, the amount used may range from 1.5 to 149.0 g per extraction process. On the other hand, emissions from smelting of the amalgam can reach as high as 27% of the total mercury losses to the environment, whereas releases after ore milling can account for as high as 96% of the total mercury loss.

PROBLEM STATEMENT

The use of mercury in the extraction of gold in ASGM communities in the Philippines poses interlinking social and economic problems that affect both human health and the environment. While there are efforts at the national level to prohibit the continued use of mercury in ASGM operations in these countries, they are not successfully cascaded to the local level due to varying reasons including lack of capacity, poor awareness, enforcement issues, and the absence of political will, to name a few. In the Philippines, these challenges are well recognized in the National Strategic Plan (NSP) for the Phase-out of Mercury in ASGM where community participation and institutional building for LGUs are identified as key

[24] Macabuhay et. al. (2017). Mercury Flow Analysis in Artisanal and Small-scale Gold Mining Operations in the Philippines. *Japanese Society of Geo-Pollution Science, Medical Geology, and Urban Geology* (in print)

implementation strategies. Developing LAPs for the phase-out of mercury use that take into account local situations specific to individual ASGM communities and are aligned with the country obligations stipulated in the Minamata Convention for Mercury will be vital in moving forward.

GOALS AND OBJECTIVES

The goal of these interventions is to promote responsible ASGM practices through the introduction of mercury-free processes, development of strategies for the sound management of mercury and mercury wastes, strengthening of institutional capacities, and creation of enabling environments that address the need for institutional, financial, social, and regulatory reforms.

The specific objectives include:

(1) Support LGUs and ASGM communities in developing their LAPs in phasing out mercury use in ASGM operations. These plans will serve as roadmaps toward reducing, and eventually eliminating, mercury use in ASGM and toward the sound management of mercury and mercury wastes including storage and disposal strategies;

(2) Assist LGUs in planning for the development of their regulatory framework on mercury in ASGM, consisting primarily of policies and local ordinances geared toward promoting sectoral sustainability; and

(3) Enhance cooperation among local stakeholders, government, and other development players.

RESULTS

A series of consultations/ workshops (Annex 2, 3 and 4) were conducted in Camarines Norte, South Cotabato, and Compostela Valley. Various local stakeholders including miners' associations and youth groups were given the opportunity to collaborate with local leaders and officials from their respective LGUs in (1) planning for the phase out of mercury use in the ASGM communities as well as in (2) identifying strategies and approaches on how to manage mercury and mercury wastes in a sound manner. External speakers were also invited to provide additional context, and to discuss the importance of sound management of mercury, the national efforts being pursued in terms of regulation, and the health effects brought about by mercury exposure. Topics of the presentations included:

South Cotabato workshop

- **Inputs on EO 79 - Prohibition on Mercury Use in ASGM** by Engr. Constancio Paye, Regional Director of the Mines and Geosciences Bureau of Region 12
- **Inputs on the Environmental Management of Mercury in South Cotabato** by Siegfred Flaviano, Provincial Environmental Management Officer (PEMO) of South Cotabato
- **Inputs on the Revised Chemical Control Order on Mercury and Mercury Compounds** by Willie Loyola, Senior Environmental Management Specialist of the Environmental Management Bureau of Region 12
- **A stride to Mercury-free Minahang Bayan in Tboli: Success and Challenges** by Siegfred Flaviano, PEMO of South Cotabato

Compostela Valley workshop

- **Briefer: Impacts of Mercury to Human Health and the Environment** by Nobel Puga, Nurse, from the Department of Health Region 11
- **Inputs on EO 79 - Prohibition on Mercury Use in ASGM** by Atty. Wilfredo Moncano Regional Director MGB of the Mines and Geosciences Bureau of Region 11
- **Inputs on Provincial Environmental Management** by Engr. Jun Luvir Basco, Provincial Environment and Natural Resources Officer of Compostela Valley
- **Inputs on Chemical Control Order of Mercury Compounds and Mercury Containing Products** by Engr. Metodio Turbella, Regional Director of the EMB Environmental Management Bureau of Region 11
- **A Stride to Mercury-free Mt. Diwata: Success and Challenges** by Alma Andoy, Women Technical Miner, Jewelry Maker

The highlight in all these workshops was the activity on local action planning, where all participating stakeholders and government were assisted in the preparation of their local action plans for the phase out of mercury use in ASGM and the sound management of mercury and mercury wastes. Consistent with the objectives articulated in the Philippine NSP for ASGM, the following components are identified in the action plans at the local level in the Philippines (Annex 5, 6 and 7). This puts the local communities and LGUs in a place where they can immediately support and enhance national efforts toward realizing the country's obligations to the Minamata Convention once it comes into force in 2017.

The components in the LAP include:

a. Reduction and elimination mercury use in ASGM;
b. Development/review of local policies and ordinances;
c. Strengthening institutional and local capacities;
d. Promotion of safe handling and storage; and
e. Establishment of environmentally sound short-term storage facilities.

REDUCTION AND ELIMINATION OF MERCURY USE IN ASGM

Under Article 7 of the Minamata Convention, parties to the Convention must take steps to reduce and where feasible, eliminate the use of mercury in ASGM, including mercury emissions and releases to the environment from mining and processing activities. If a party determines that there is more than insignificant ASGM activity in its territory, and that mercury use is occurring, it must notify the Minamata Secretariat and develop and implement a National Action Plan (NAP) for ASGM. Among other things, the NAP must contain national objectives and reduction targets, specific actions to eliminate worst practices, and steps to facilitate formalization of the sector. All these will require close coordination with local ASGM communities and local government bodies. It is crucial, therefore that the local action plans are aligned to these national efforts.

In Camarines Norte, LGUs included in their LAPs their intent to intensify the campaign against the worst kinds of ASGM practices such as whole-ore amalgamation and open burning of amalgam through IEC programs. At the village level, these actions will help inform and educate ASGM communities, encouraging them to adopt mercury-free methods. The Miners' Association in Barangay Dalas will also move ahead with their plan to directly process ores in cyanide plants to move away from mercury use.

On the other hand, the *Batang Bantay Toxics* youth group will push the advocacy through village assemblies.

Stakeholders and government officials in South Cotabato received copies of BAN Toxics' Community Based Mercury Monitoring Manual and participated in workshops related to the Minamata Convention and the situation of the ASGM sector. Despite their concerns about shifting to mercury-free processes, including lack of resources to change the equipment that they use of processing, the Artisanal and Small-scale Gold Miners Association in T'boli, South Cotabato were open to accepting alternative methods in extracting gold from its ore. They recommended the local government and allied offices to create a taskforce for the reduction/ elimination of mercury and mercury compounds. In parallel, the Integrated Provincial Health Office (IPHO) will pursue certification of zero mercury usage as a pre-requisite for the renewal of sanitary permits to operate. The Department of Education (DepEd), on the other hand, will promote the creation of youth organizations and implement IEC campaigns.

The ASG miners from the Nabunturan Integrated Multipurpose Cooperative in Compostela Valley committed to support information and peer education campaigns to miners as well as in their communities. They are also looking forward to entering a memorandum of agreement (MOA) with the provincial government, the Department of Science and Technology (DOST), and the University of the Philippines (UP) for the installation of a mercury-free facility with the associated training and capacity development activities. Government, on the other hand, is planning to continue to conduct information drives highlighting the health effects of mercury and distribute IEC materials to health centers.

DEVELOPMENT/ REVIEW OF LOCAL POLICIES AND ORDINANCES

In order to create an enabling environment to effectively deal with the health and environmental impacts of mercury and mercury wastes that transcends national boundaries, a global instrument such as the Minamata Convention that focuses on the sound management of mercury and mercury wastes is required. Upon ratification and coming into force, parties are encouraged to develop a legal and regulatory framework to ensure country compliance to the provisions in the Convention. In many cases, national frameworks may not be enough to translate these efforts to real and sustainable benefits that can be felt at the local community level. Thus, complementing policies and ordinances at the local level are essential to bridge the gaps that may be inherent to the governance systems.

In all three locations, plans revolve around the development of local resolutions, policies, and ordinances that will support the reduction and elimination of mercury from ASGM as well as the sound management of mercury and mercury wastes. A legislation to identify and to create a common disposal site for waste mine tailings and to establish a temporary storage facility was also specifically recommended in Compostela Valley.

STRENGTHENING INSTITUTIONAL AND LOCAL CAPACITIES

The Philippine Dossier on the Ratification and Early Implementation of the Minamata Convention on Mercury identified measures for implementation that will inform a 10-year management plan. Objectives include (1) strengthen legal and regulatory instruments pertaining to mercury, mercury-containing wastes, and contaminated sites, (2) establish health and safety programmes for handling mercury and mercury-containing wastes, and (3) strengthen public participation, among others[25]. Plans on how to support local governments in implementing these measures in terms of fiscal support and capacity building efforts, however, are not articulated clearly. Identified here are the proposed LAPs for the three ASGM communities pertaining to building institutional and local capacities.

In Camarines Norte, stakeholders and local government officials identified capacity building needs including forums, seminars, and trainings on the disposal, storage and handling of mercury and chemical handling to prevent environmental damage. The IPHO in South Cotabato intends to conduct trainings for all local health personnel, while the DepEd will look at integrating the topic of hazardous chemicals such as the Fearsome Five[26] into their subject areas and capacitating both student and faculty members. In Compostela Valley, focus is on training miners on the use of mercury and cyanide free methodologies, establishment of training centers, and benchmarking with global best.

PROMOTION OF SAFE HANDLING AND STORAGE

Article 10 of the Minamata Convention text elaborates on the requirements for the storage of mercury and mercury-added products (not including wastes), which is complemented by the Basel Convention which has produced Technical Guidelines on the Environmentally Sound Management of Mercury

[25] Ratification and Early Implementation of the Minamata Convention on Mercury in the Philippines. Department of Environment and Natural Resources.
[26] Asbestos, Arsenic, Cadmium, Lead, Mercury

Wastes. At the local level, safe handling and adequate systems/ processes concerning interim storage of mercury and mercury wastes are essential before these hazardous substances are transported to final storage and disposal. All of the local actions plans produced in the three workshops identified training on the safe handling and storage of mercury as the priority.

ESTABLISHMENT OF ENVIRONMENTALLY-SOUND INTERIM STORAGE FACILITIES

For this component, stakeholders raised the need for government support in the construction of the appropriate short-term storage facility (covering both mercury and mercury wastes). Once the Minamata Convention is ratified and comes into force, access to financial support from the Global Environment Facility (GEF) will be made more available to parties. Another option is to look for local funding support and construct the storage facility based on Minamata and/or Basel technical guidance documents.

ANNEX 1

MERCURY FLOWS IN ASGM OPERATIONS IN CAMARINES NORTE, SOUTH COTABATO AND COMPOSTELA VALLEY, PHILIPPINES

	ASGM Site			Average
	Camarines Norte	Compostela Valley	South Cotabato	
No. of operations surveyed	18	27	7	--
Amalgam, g	4.5	3.0	3.1	3.5
Gold, g	1.9	1.0	1.4	1.4
Mercury emissions[a], g	2.6 (4%)	1.9 (27%)	1.7 (12%)	2.1
Mercury releases[b], g	70.6 (96%)	5.2 (73%)	12.8 (88%)	29.5
Total emissions and releases, g	73.3	7.2	14.5	31.7
Ave Hg:Au[c]	34.3	10.7	12.6	19.2
Max Hg:Au	149.0	33.8	37.2	73.3
Min Hg:Au	1.5	2.9	1.8	2.1

[a] *Weight loss after smelting of amalgam*

[b] *Difference between mercury added to the mill and mercury recovered after milling*

[c] *Amount of mercury (g) used to extract 1.0 g of gold*

ANNEX 2

ACTIVITY REPORT

BUILDING A LOCAL ACTION PLAN FOR MERCURY MANAGEMENT: Jose Panganiban and Labo, Camarines Norte

Person/s responsible	Evelyn Cubelo, Arleen Honrade, Jimbea Lucino, Arlene Galvez, Noel Percil

Workshop Objectives

1. To facilitate discussion on the situation of mercury use in ASGM in Jose Panganiban and Labo, Camarines Norte;
2. To present progress of BAN Toxics' support in the ASGM areas, with particular focus on mercury reduction, capacity building and mercury-free methods of gold recovery; and
3. To facilitate discussion and planning on managing and storing mercury and mercury waste in ASGM

Participants

Municipality of Jose Panganiban	21 pax (12 male, 10 female)
Municipality of Labo	27 pax (13 male, 14 female)
TOTAL	48 pax (25 male, 24 female)

Topics Discussed

Session 1	Update on the revised CCO and Inputs *on the National Strategic Plan for Mercury Elimination*
Session 2	Local Action Planning

Objectives	**X** Realized	_ Not realized

Activity Flow

ACTIVITY	PROCESS	PERSON/S IN-CHARGE	OUTPUT/S
Prayer	Interactive	Ms. Charito Elcano Officer, Samahan ng Magkakabud ng Mambulao Mr. Mateo Magallanes President, Samahan ng Magkakabud sa Dalas	Invoking God's wisdom and guidance of the activity
Welcome Remarks	Speech	Hon. Maria Parale Punong Barangay, Dalas, Labo	Making sure everyone felt welcome in the barangay.
Presentation: *Overview of the Local Action Plan*	Lecture	Ms. Arlene Galvez Luzon ASGM Coordinator, BAN Toxics	Participants were provided with information on activities related to the updating of the CCO for mercury and mercury compounds. Salient provisions of the CCO on Hg and Hg compounds include: - 2020 phase out of mercury - Limitations to the use and distribution of mercury and mercury compounds - Phase out of dental amalgam - Mercury and mercury compounds should not be diverted to other use especially in ASGM
Self-introduction of participants	Interactive	Ms. Jimbea Lucino Mindanao ASGM Coordinator, BAN Toxics	Participants had fun getting to know each other
Mood Setting/Ice breaker	Exercise	Mr. Noel Percil Project Officer, BAN Toxics	Participants had a good laugh doing the creative exercise.
Presentation*: Salient provisions of the National Action Plan*	Lecture/ discussion/ powerpoint presentation	Ms. Evelyn Cubelo Development Program Manager, BAN Toxics	Discussions on: - Inputs to the NSP approved by DENR - Management of Hg and different types of mercury storage facilities

for Mercury Reduction			
Local Action Planning	Workshop	BAN Toxics staff	Mercury reduction and management plans

Open Forum

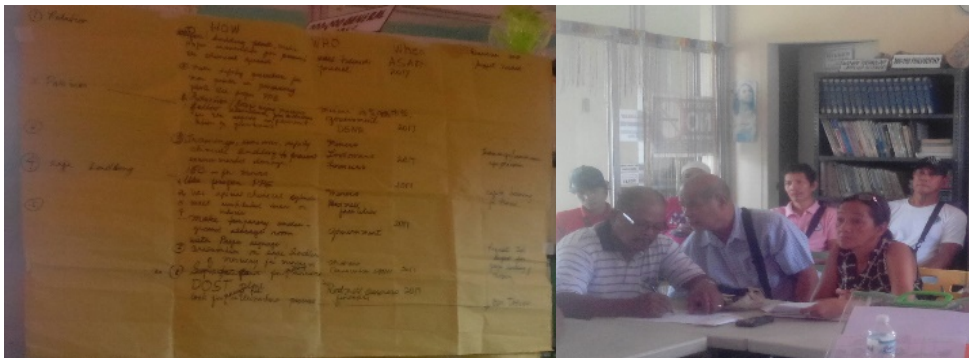
QUESTION(S) and COMMENTS	ANSWER/S
Mr. Joe Maligat – We don't need a storage facility for mercury because by 2018 we will no longer use mercury.	Ms. Evelyn Cubelo (BAN Toxics)– There is still a need to plan where and how to store the remaining supply of mercury, how to clean up contaminated equipment and tailings, and how to manage mercury wastes.
Ms. Sarah Aviado (MENRO, Jose Panganiban)– At present the LGU does not have the capability and budget to construct a storage facility. However, the municipality's MRF (material recovery facility) is going to transfer to a former ice plant so maybe it is a good location for a temporary storage facility.	Ms. Evelyn Cubelo (BAN Toxics)– The government plans to construct a mercury storage facility but the location is still being explored. BAN Toxics is pushing for this to happen through the ASGM technical working group. As an NGO, BAN Toxics' role is to inform the stakeholders and provide support in coming up with a plan for temporary storage.
Miner from Sta. Milagrosa – There should be a safety procedure before constructing the facility to prevent chemical spillage.	
Hon. Maria Parale – We need more information about proper storage of mercury.	
Engr. Zabala (MENRO, Labo) - Mercury is considered a special hazardous waste and the municipality has no plan yet on storage and management. Other LGU put their hazardous wastes on a special MRF.	Engr. Rieza (DENR-EMB) – The bureau has a special design and requirements for mercury storage. Traditionally though, there is no mercury use in ASGM. At present DENR is conducting an audit of ASGM operations, and I hope that miners will not treat us as the enemy because we are not. DENR is here to help the miners comply to the requirements for safe mercury use in ASGM. An Environmental Compliance Certificate (ECC) is a requirement before the facility is constructed, but since the facility is already there,

	EMB will just assessed and help you comply the following requirement. - Copy of ECC - Business permit - Mayor's permit - Chemical management plan - Certificate of liabilities of parties in case of accident - Documentation of the area - CCO registration 250,000
Brenda Rustique (Barangay healthworker in Dalas)- Since mercury is toxic and endangering the health of the community and the law says no mercury use in mining, why do you still allow the miners to use it and ask them to pay such a huge amount? Mr. Noel Percil (BAN Toxics) – Why will you still issue permit if the law says no more mercury use in ASGM?	Engr. Rieza (DENR-EMB) - miners are still using mercury that's why the Bureau is conducting an inventory so that we can register and issue them a CCO registration. Ms. Evelyn Cubelo (BAN Toxics) – Mining is in a way an enterprise venture of the community. But miners are using mercury to extract gold, so we should really be thinking about eliminating mercury use and storage at this point. BAN Toxics' advocacy is to reduce, eliminate and introduce a mercury free alternative – an example is our miner to miner activities and training on gravity concentration method. Engr. Zabala – It is like cigarettes, there are lots of IEC about the ill effects to health, but, still lots of people are smoking cigarettes and the government cannot eradicate its market because it will affect the tobacco farmers. If we introduce an alternative, we need to strengthen it and promote on a large scale so that everybody is informed.
Ms. Evelyn Cubelo (BAN Toxics) – What can MENRO do to manage mercury in Labo?	Engr. Zabala – We will construct a temporary storage for light bulbs and thermometer and we need technical support from DENR. There are lots of things to consider, so we need to coordinate with EMB. Engr. Rieza – In cases of total ban the bureau will set up procedures, but right now DENR has no facility to store mercury. EO 79 applies only to

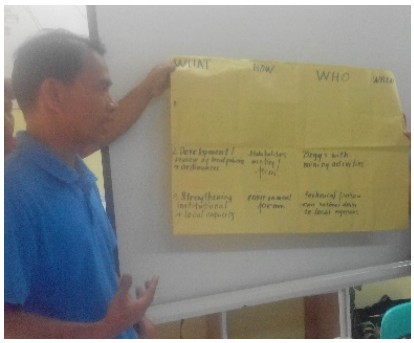
	declared minahang bayan. Another thing, almost all MENRO's in Camarines Norte are just designate and no appointment, it means no offices.
Kagawad Macatangay – The barangay council wish to invite BAN Toxics to the barangay assembly on Sunday so that they can help the council inform the people about the mercury ban.	Ms. Eve Cubelo – Noel Percil, BAN Toxics staff will attend the barangay assembly but as to the IEC he is not prepared to do it on his own so maybe we can plan for the IEC on the next barangay assembly.

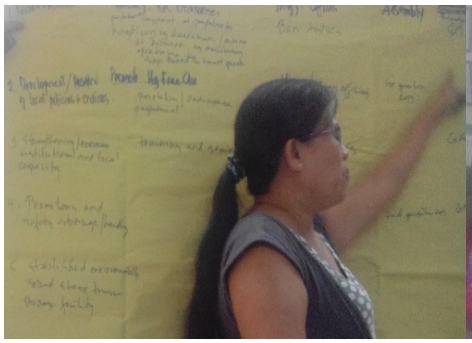
Documentation

Presentation of LAPs of (1) Municipal LGU and (2) Barangay LGU of Jose Panganiban, Camarines Norte

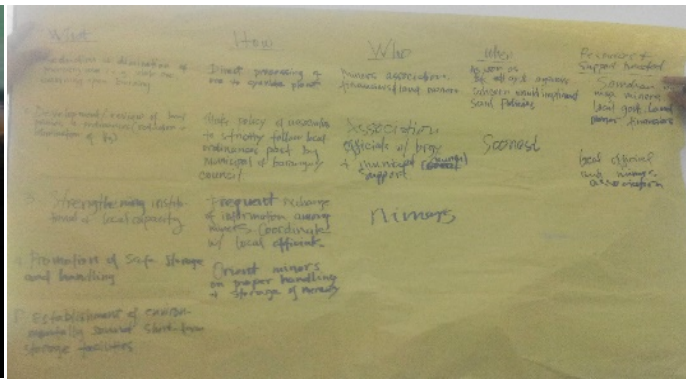


LAP of the Small-scale Miners' Association of Jose Panganiban, Camarines Norte






Presentation of LAPs of (1) Municipal LGU and (2) Barangay LGU of Jose Panganiban, Camarines Norte

LAP of the Small-scale Miners' Association of Dalas, Labo, Camarines Norte

LAP of the *Batang Bantay Toxics* Organization

ANNEX 3

ACTIVITY REPORT

BUILDING A LOCAL ACTION PLAN FOR MERCURY MANAGEMENT: T'boli, South Cotabato

Venue	Provincial Development Council Hall, Provincial Planning and Development Office Building, Capitol Compound, Koronadal City, South Cotabato
Person/s responsible	Jimbea Lucino, Augusto Cunanan

Workshop Objectives

1. To facilitate discussion on the situation of mercury use in ASGM in South Cotabato;
2. To present progress of BAN Toxics' support in the ASGM areas, with particular focus on mercury reduction, capacity building and mercury-free methods of gold recovery; and
3. To facilitate discussion and planning on managing and storing mercury and mercury waste in ASGM

Participants

TOTAL	27 pax (18 male, 9 female)

Topics Discussed

Session 1	Impacts of Mercury to Human Health and the Environment
	Inputs on EO 79: Prohibition of Mercury Use in ASGM
	Inputs on the Revised CCO on Mercury and Mercury Compounds
Session 2	Roadmap to a Mercury-free *Minahang Bayan*

Objectives	**X** Realized	_ Not realized

Activity Flow

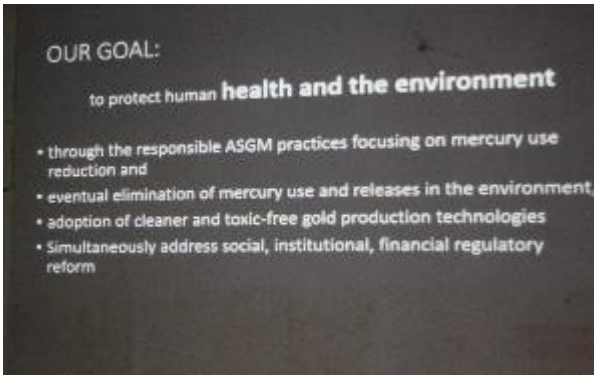
ACTIVITY	PROCESS	PERSON/S IN-CHARGE	REMARKS and OUTPUT/S
Prayer		Mr. Augusto Cunanan Board of Directors, BAN Toxics	
Welcome Remarks	Speech	Hon. Daisy Fuentes Governor, South Cotabato	
Presentation: *Impacts of Mercury to Human Health and the Environment*	Lecture/ discussion	Dr. Alah Baby Vinzon IPHO, South Cotabato	The Department of Education greatly appreciate the input and committed to re-echo their learning to other teachers and students.
Presentation: *Inputs on EO 79* *Management of Mercury in South Cotabato*	Lecture/ discussion	Engr. Constancio Paye Regional Director, MGB Region XII Mr. Siegfred Flaviano PEMO, South Cotabato	The PEMO informed the group that the government is now working with the National Bureau of Investigation (NBI) to monitor the trade of mercury and pointed out that sooner or later mercury will be eliminated in South Cotabato.
Presentation: *A Stride to a Mercury-Free Minahang Bayan*	Lecture/ discussion	Mr. Siegfred Flaviano PEMO, South Cotabato ESO of T'boli National High School	The PEMO reiterated that access to financial assistance to miners who will convert to mercury-free method is still available. DepEd sees ESO's works as a great initiative and moved to replicate the activities in other areas in the province
Local Action Planning	Workshop/ presentations	Ms. Jimbea Lucino Mindanao ASGM Coordinator, BAN Toxics	Mercury reduction and management plans

Open Forum

QUESTION(S) and COMMENTS	ANSWER/S
Is there any available toxicologist in South Cotabato	Mr. Jimbea Lucino (BAN Toxics)- Diagnosis of mercury poisoning is undertaken through series

	of laboratory tests. But, the treatment itself is not yet available in South Cotabato. Miners or anyone can do the treatment at the Poison Center in Southern Philippines Medical Center in Davao City through Dr. Perez. The center has the capacity to diagnose cases of poisoning not only mercury.
When is the ban of dental amalgam?	Mr. Willie Loyola (DENR-EMB)- Dental amalgam is not used anymore in tooth fillings.
The use of mercury is banned in ASGM based on Executive Order 79. But why are miners still using it? Where do they get the mercury?	MGB representative- The MGB representative called on the miners to completely practice mercury-free method to recover gold. “It may be difficult now but you should because it’s banned,” he added.
There is difficulty in practicing mercury-free because the process introduced takes time. Miners want a more efficient process. However, they committed to abide to the mercury ban if strictly implemented and will slowly shift into mercury-free method of gold recovery.	
Alternative livelihood should be available for the miners because they like jewelry making and all other suitable livelihood.	
There are many Executive Orders but somehow, not followed and ignored.	MGB representative- The law should be enforced. The big ball mill facilities should follow the ban on mercury since they have the capacity and resources to change drums or other equipment required. MGB will help follow up on the large-scale mining group. EMB in coordination with the PEMO shall conduct monitoring in ball mills and ensure they comply and practice the mercury-free method.

Documentation



Presentation on the Impact of Mercury to Human Health and the Environment

Presentation on the *Mercury-Free Minahang Bayan*

Develop and presentation of LAPs

ANNEX 4

ACTIVITY REPORT

BUILDING A LOCAL ACTION PLAN FOR MERCURY MANAGEMENT: Compostela Valley

Venue	Sanitary Function Hall, Nabunturan, Compostela Valley
Person/s responsible	Jimbea Lucino, Augusto Cunanan

Workshop Objectives

1. To facilitate discussion on the situation of mercury use in ASGM in Compostela Valley;
2. To present progress of BAN Toxics' support in the ASGM areas, with particular focus on mercury reduction, capacity building and mercury-free methods of gold recovery; and
3. To facilitate discussion and planning on managing and storing mercury and mercury waste in ASGM

Participants

TOTAL	57 pax (33 male, 27 female)

Topics Discussed

Session 1	Impacts of Mercury to Human Health and the Environment
	Inputs on EO 79: Prohibition of Mercury Use in ASGM
	Inputs on the Revised CCO on Mercury and Mercury Compounds
Session 2	Roadmap to a Mercury-free Mt. Diwata

Objectives	**X** Realized	_ Not realized

Activity Flow

ACTIVITY	PROCESS	PERSON/S IN-CHARGE	REMARKS and OUTPUT/S
Prayer		Mr. Augusto Cunanan Board of Directors, BAN Toxics	
Welcome Remarks	Speech	Hon. Jayvee Uy Governor, Compostela Valley	
Presentation: *Impacts of Mercury to Human Health and the Environment*	Lecture/ discussion	Ms. Nobel Puga Nurse, DOH Region XI	
Presentation: *Inputs on EO 79* *Management of Mercury in South Cotabato*	Lecture/ discussion	Atty. Wilfredo Moncano Regional Director, MGB Region XI Engr. Jun Basco PENRO, Compostela Valley	Participants were provided with information regarding the national and local policies that regulate ASGM operations in the country. Atty. Moncano further explained the rules regarding the prohibition of the use of mercury, while Engr. Basco explained the mandate of the PENRO.
Presentation: *A Stride to a Mercury-Free Minahang Bayan*	Lecture/ discussion	Ms. Alma Andoy Technical Miner and Jewelry Maker	
Local Action Planning	Workshop/ presentations	Ms. Jimbea Lucino Mindanao ASGM Coordinator, BAN Toxics	Mercury reduction and management plans

Open Forum

QUESTION(S) and COMMENTS	ANSWER/S
Engr. Jun Basco (PENRO)- EMB should set guidelines on proper disposal of mercury from provincial level down to barangay level. This will give the Provincial Environment and Natural Resource Office a mandate to enforce the policy.	

Mr. Kim Evangello (DTI)- We cannot do anything about mining because our concern is the value chain of the gold and consumer's concern. But we can help promote mercury-free jewelry – a safe alternative for consumers.	
DOST recommended the use of gravity concentration for the processing of gold. DOST is willing to give trainings for the miners. They have an ongoing project on mercury-free facility which is currently being constructed in partnership with the Nabunturan Integrated Multipurpose Cooperative and will be operational soon.	

Documentation


Presentations on (1) the provisions of EO 79 and (2) the Management of Mercury in Compostela Valley


Presentation on a Mercury-Free *Minahang Bayan* in Compostela Valley

Development and presentation of LAPs

ANNEX 5

LOCAL ACTION PLAN FOR MERCURY ELIMINATION AND WASTE MANAGEMENT: Jose Panganiban, Camarines Norte

WHAT	HOW	WHO	WHEN	RESOURCES NEEDED
Municipal Local Government Unit				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	IEC Campaign	Municipal Local Government Unit Office (MO), Municipal Health Office (MHO), Municipal Environment and Natural Resource Office (MENRO), Miners Association in Jose Panganiban (SMM), DepEd and Non-Government Organizations (NGOs)	2016 – 2017	IEC materials, transportation and food, all miners
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Development of ordinances and policies, including internal rules and regulations (IRRs) Strengthening implementing arm and creation of special body	MO, MHO, MENRO, SMM DepEd, Philippine National Police (PNP) and NGOs	2016 – 2017	Trainings, EOs
3. Strengthening institutional and local capacity	Orientation/ symposium Paralegal training	MO, MHO, MENRO, SMM, DepEd, PNP and NGOs	2016 – 2020	

	Partnership with DOH, EMB, MGB, PNP, NGOs, LGU			
4. Promotion of safe handling and storage	Provide IEC technical aspects of safe handling and storage of mercury	MENRO, Municipal Disaster Risk Reduction Management Office (MDRRMO), NGOs	2016 onwards	Budget and technical support
5. Establishment of environmentally sound short-term storage facilities	Partnership with technical persons Access grants and financial support Manpower for the storage	Local Chief Executive (LCE)	2017 onwards	Project proposal, technical person
Barangay Local Government Unit (BLGU)				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	IEC campaign Adoption of mercury-free method	Barangay Council (Village Council)	Quarterly	Brochure, leaflets, training funds
2. Development/ review of local policies and ordinances for the reduction and elimination of mercury use	Adoption of resolution/ordinances made by municipal council Create barangay policies and ordinances on elimination of mercury	Barangay Council	Upon approval of municipal ordinances	
3. Strengthening institutional and local capacity	Actual training/orientation on disposal, storage and handling of mercury, mercury-free mining methods	Barangay Council, Miner's Association, BAN Toxics	Quarterly	
Samahang Magkakabod ng Mambulao (Miners Federation of Jose Panganiban)				
1. Reduction and elimination of mercury use (e.g.	Before building facility, make proper insulation	Well trained personnel	ASAP	

whole ore amalgamation, banning open burning)	to prevent chemical spread Use proper PPEs		
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Follow government policies	Miners, LGU, Department of Environment and Natural Resources (DENR)	2017
3. Strengthening institutional and local capacity	Training, seminar on chemical handling to prevent environmental damage	Miners	2017
4. Promotion of safe handling and storage	Make temporary storage with signage, PPEs, use special chemical cylinder	LGU	2017
5. Establishment of environmentally sound short-term storage facilities	Orientation, DOST plant, segregate pond with tailings with mercury, alternative process	Miners, Ban Toxics	2017

LOCAL ACTION PLAN FOR MERCURY ELIMINATION AND WASTE MANAGEMENT: Labo, Camarines Norte

WHAT	HOW	WHO	WHEN
Municipal Local Government Unit			
1. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Stakeholders meeting/forum	Barangays with mining activities	1st quarter of 2017

2. Strengthening institutional and local capacity	Environmental forum	Technical persons from national down to local agencies	1st and 2nd quarter of 2017
Barangay Local Government Unit			
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	Advocacy activities with miners; cluster village (*purok*) signage with mercury-free advocacy	BLGU, BAN Toxics	Barangay assemblies, Gender and Development (GAD) budget
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Develop barangay resolution and ordinances	BLGU, miners	1st Quarter 2017 GAD budget
3. Strengthening institutional and local capacity	Training and seminars	BLGU, BAN Toxics	2nd Quarter 2017 GAD budget
Samahang Magkakabod ng Dalas (Miners Federation of Dalas, Labo)			
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	Direct processing of ore to cyanide plant	Miners Association in Dalas (SMD)	ASAP
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Strictly follow policies of BLGU	SMD	ASAP
3. Strengthening institutional and local capacity	Knowledge and technology transfer among miners	SMD, BAN Toxics	
4. Promotion of safe handling and storage	Orientation on proper handling and storage	BAN Toxics	
***Batang Bantay Toxics* (In-school and Out-of-school Youth)**			
1. Reduction and elimination of mercury use (e.g. whole ore	Advocacy through barangay assembly	*Batang Bantay Toxics* (Kids Against Toxics)	During regular and special

amalgamation, open burning)			barangay assemblies
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Coordinate and give inputs in the development of barangay ordinances	*Batang Bantay Toxics*	Cluster (Purok) meetings – Nov. 10 – 20, 2016
3. Strengthening institutional and local capacity	Seminars/forum	*Batang Bantay Toxics*	Nov. 28 – Dec. 30, 2016

ANNEX 6

LOCAL ACTION PLAN FOR MERCURY ELIMINATION AND WASTE MANAGEMENT: T'boli, South Cotabato

WHAT	HOW	WHO	WHEN	RESOURCES NEEDED
Department of Education				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	IEC campaign Creation of youth organization	Pupils/ students, teachers, parents	2nd week of December 2016	IEC materials, Parents Teachers Association (PTA) financial support, school maintenance overhead and operating expenses (MOOE), resource persons
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Request a copy of local policies and ordinances from the LGU of Tboli	District Supervisor, Environmental Steward Organisation (ESO) or *Batang Bantay Toxics* and youth organization partners	3rd week of December 2016	Copies of local policies and ordinances
3. Strengthening institutional and local capacity	Integration of Fearsome Five in the subject areas Youth capacity building, teachers' capability building	ESO *Batang Bantay Toxics*, students/ pupils, teachers, school administrators	4th of December 2016	Materials for capacity building, resource persons, school's PTA assistance, MOOE, and partner

	Benchmarking in mining sites and gold processing plant areas			agencies and organizations
4. Promotion of safe handling and storage	Benchmarking in mining sites and gold processing plants Conduct symposia on Toxics-Free Schools	ESO *Batang Bantay Toxics*, students/ pupils, teachers and school administrators, small scale miners	2nd week of January 2017	Materials for symposia, videos presentations,
5. Establishment of environmentally sound short-term storage facilities	Encourage small scale miners to establish a short-term storage facility Encourage the LGU for the strict implementation of the local policies and ordinance on the establishment of the short- term storage facility	LGU, Sangguniang Bayan members, small scale miners, DepEd	January-March 2017	Blueprint and program of work for the establishment of the storage facility, budget of storage facility from LGU and small scale miners
Integrated Provincial Health Office and Municipal Health Office				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	Certification of zero mercury usage as pre-requisite of renewal of sanitary permit to operate	MHO Tboli	1st quarter of 2017	Personnel, permits
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	IEC about ill effects of mercury through community assembly and at Barangay/Village health stations (e.g. mother's class & food handlers class)	MHO Tboli	Dec. 2, 2016- Food handlers class 1st quarter of 2017	Personnel, lecture flipchart, meal and snacks
3. Strengthening institutional and local capacity	Strict implementation of the local policies and ordinances	MHO Tboli		Policies and ordinances relating to mercury

				reduction and elimination
4. Promotion of safe handling and storage	Training of all local health personnel of South Cotabato	IPHO	1st quarter of 2017	Training materials, trainer, venue, meals and snacks
5. Establishment of environmentally sound short-term storage facilities	Capacity building of health staff on safe handling and storage	IPHO	1st quarter 2017	Training materials, trainer, venue, meals and snacks
Artisanal and Small-scale Gold Miners Association in T'boli				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	Introduce alternative method of extracting gold from ore Strengthening/ creation of taskforce for the reduction/ elimination of mercury and mercury compounds	MHO, DENR, resource focal person, technical experts	Upon approval of the plan for the adoption, alternative methods should be introduced from year 1 onwards	Financial assistance, machineries and equipment; commission the accredited mercury transporter for the storage and disposal
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Develop policy and ordinance Implement/ enforce policies such as EO 79 Enforce the approve ordinances Strengthen existing task force Issue moratorium for 1 year	DENR, LGU, PNP	2016 - 2017	Financial assistance
3. Strengthening institutional and local capacity	IEC campaign Dialogue/ commitment of the land owners and miners	DENR, LGU, miners, land owners, other constituents	2016 - 2017	Financial Support

	Capacity-building of local legislators and enforcers			
4. Promotion of safe handling and storage	The LGU must introduce a safe possible means to the land owners, miners and general public	DENR, LGU, miners, land owners, other constituents	2016 - 2017	Financial Support
5. Establishment of environmentally sound short-term storage facilities	The LGU, Provincial level should establish short-term storage facility for mercury waste MO to draft ordinance on mercury-free facility	LGU, miners	2017-2018	Technical Support and financial Support

ANNEX 7

LOCAL ACTION PLAN FOR MERCURY ELIMINATION AND WASTE MANAGEMENT: Compostela Valley

WHAT	HOW	WHO	WHEN	RESOURCES NEEDED
Policy Group				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	Intensify IEC using the new mercury free technology Produce documents proving the efficiency and effectivity of alternative mercury-free methods Benchmarking Creation of transition procedures Intensify monitoring Livelihood support for the affected community	MENRO, Department of Trade and Industry (DTI), Provincial Environment and Natural Resource Office (PENRO), BAN Toxics, DOST, Technical Education and Skills Development Authority (TESDA)	2017 onwards	Budget
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Create IRR of the Provincial Code Create Municipal Environmental Code Create MENR Office	LGU, Department of Interior and Local Government (DILG), LCE	2018	Budget
3. Strengthening institutional and local capacity	Establish training centers for alternative methodologies Benchmarking abroad	DENR Environmental Management Bureau (EMB), TESDA, DILG, DTI	2018	Budget, provincial ordinances for mining areas

4. Promotion of safe handling and storage	Creation of guidelines on safe handling and storage Lobbying from LGUs Creation of facilities Creation of Technical Group	EMB, LGU, stakeholders, environmental advocates	ASAP	Budget
5. Establishment of environmentally sound short-term storage facilities	Review of policy /environmental code be proposed to provincial council	PENRO and Provincial Council	2017	Technical support from Atty. Moncano of MGB
Artisanal and Small-scale Gold Miners				
1. Reduction and elimination of mercury use (e.g. whole ore amalgamation, open burning)	IEC campaign Cyanide process in Mineral Processing Facility MOA for a Hg-free with facility with Provincial LGU, Nabunturan Integrated Mining Cooperative, DOST, UP	Miners	*On-going*	Budget for mobilization, IEC materials
2. Development/ review of local policies and ordinances for reduction and elimination of mercury use	Propose amendments to local policies in the reduction on the usage of mercury	LGUs (Province, Municipal, Barangays)	1st quarter of 2017	Speakers from organized small scale miners, BAN Toxics, MGB
3. Strengthening institutional and local capacity	Conduct training on mercury-free gravity concentration method	Miners	Every 3 months (starting 2017)	Technical miner trainers
4. Promotion of safe handling and storage	Propose legislation to LGUs by providing common disposal site of mine wastes	Miners	2nd quarter of 2017 -	Officers of the organized small scale miners
5. Establishment of environmentally	Provide storage area in every *Minahang Bayan*	Miners		

sound short-term storage facilities