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Implementing a Program to Remove Mercury in Small-Scale Gold Mining in Lebak Regency

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Abstract

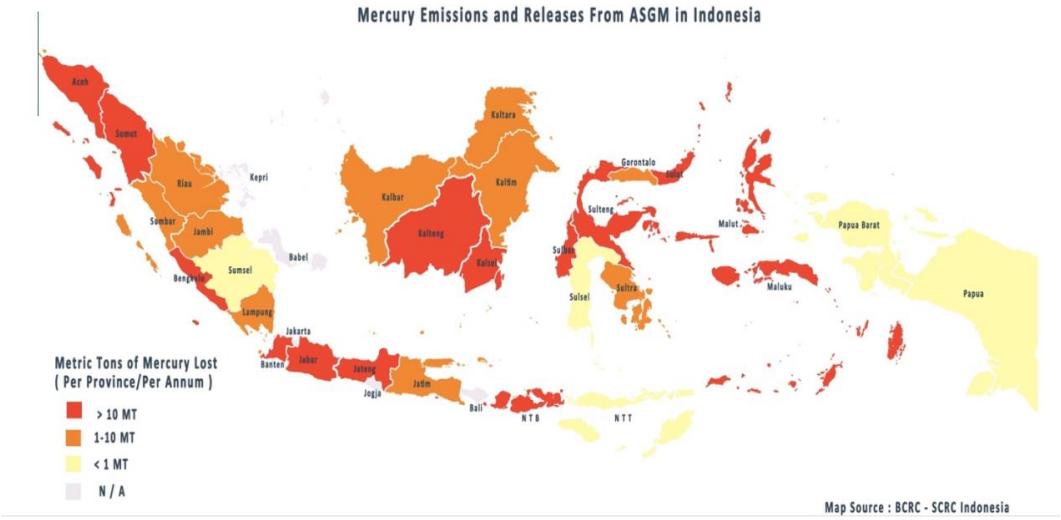
This study aims to determine and analyze the implementation of the mercury removal program in the field of small-scale gold mining in Lebak Regency. Using the implementation model according to George Edwards III in Leo Agustino (2014: 149) there are four variables that determine the success of policy implementation, namely, communication, resources, disposition, and bureaucratic structure. The research method uses descriptive qualitative. The results showed that the implementation of the mercury removal program in the field of small-scale gold mining in Lebak Regency was still not optimal. There are several obstacles, namely the lack of awareness of the small-scale gold mining community on the impact of mercury hazards on human health and the environment, limited program budgets due to deductions due to the Covid-19 pandemic, the absence of monitoring or monitoring from the Lebak Regency Environmental Agency after socialization activities are carried out, the lack of quantity of human resources of the Lebak Regency Environmental Service, especially those in charge of spaciousness, the lack of optimal transfer of livelihoods to small-scale gold mining communities by the Lebak Regency Government, weak law enforcement carried out by the Lebak Police in dealing with illegal gold mining in Lebak Regency.

Keywords: Implementation, Mercury Removal Program, Environmental Service, Gold Mining

Background

The small-scale gold mining sector worldwide is the largest source of mercury release into the environment. The use of mercury in Indonesia itself is most widely used by Small-Scale Gold Mining where they lack knowledge on how to use mercury properly, mining in conditions of minimal equipment, facilities, and capital. Small-Scale Gold Mining activities are a very important source of livelihood for many people. Meanwhile, mercury can have a harmful impact on human health and pollute the environment.

Figure 1. Map of Small-Scale Gold Mining Distribution and Release of Mercury Emissions in Indonesia



Source: *Basel and Stockholm conventions Regional Centre located in* Indonesia (BCRC – SCRC Indonesia), 2019

Based on the Basel Convention Regional Center for Sount-East Asia in Indonesia (BCRC-SEA) document, the Minamata Initial Assessment in 2019. Indonesia has 24 small-scale gold mining provinces spread throughout Indonesia with a total number of miners of 105,600 people in primary gold mining and 73,600 people in secondary gold mining with an estimated amount of mercury use in a year of 1,727.5 tons, estimated mercury emissions of 345.5 tons, and total estimated gold production of 53.8 tons. Of the 24 provinces, there are those that contribute 99% of mercury emissions and releases from small-scale gold mining in Indonesia, including Central Sulawesi, Banten, West Nusa Tenggara, North Sulawesi, West Java and Central Kalimantan. There are 10 regencies/cities with the highest mercury emissions and releases in small-scale gold mining and there are in the extreme category, namely with Hg > 10 MT per year are Palu, Lebak, Buru, West Sumbawa, Banyumas, Bogor, Mandailing

Natal, Bolaang Mongondow and Murung Raya (Ministry of Environment and Forestry, 2020).

Banten Province has potential mining resources to develop. The potential of mining materials is spread in several areas, namely Lebak Regency, Pandeglang Regency, Serang Regency and Cilegon City. However, there are still many illegal mining activities carried out by irresponsible parties. Based on data from the Directorate General of Minerals and Coal (Ditjen Minerba) of the Ministry of Energy and Mineral Resources in Banten Province, there are at least 120 illegal mines, namely 49 illegal gold mines, and 22 illegal coal mines in Lebak Regency, and 49 non-metallic and rock mines spread across Lebak, Pandeglang, Serang and Cilegon Regencies.

Gold mining in Lebak Regency, namely in the Cikotok area, has been widely known as Indonesia's first gold mine. In 1960 it became Indonesia's property in the management of PT ANTAM. After PT ANTAM ended its post-mining activities dated December 11, 2015, it does not mean that gold mining activities have stopped in this area. Gold mining activities exist but are only carried out by the community. Mining activities by the community are known as Small-Scale Gold Mining (Haris, Krisnayanti & Anderson, 2014). Small-Scale Gold Mining is one of the important mining issues in the Lebak Regency area. Gold processing is generally carried out by amalgamation using a rolling machine, along the river flow and near the house or yard. Gold mining with this hood is at great risk of heavy metal pollution very dangerous to human health and the environment. The following are the number of Small-Scale Gold Mines in Lebak Regency in 2018:

Table 1. Number of Small-Scale Gold Mines in Lebak Regency in 2018

No.	Name Company	Location	Broad (HA)	Commodities	Information
1	Community	Kec. Cibeber	2	Metallic minerals (Gold)	40 Holes
2	Community	Kec. Cibeber	1,5	Metallic minerals (Gold)	35 Holes
3	Community	Kec. Cibeber	2	Metallic minerals (Gold)	50 Holes
4	Community	Kec. Cibeber	1,5	Metallic minerals (Gold)	30 Holes
5	Community	Kec. Bayah	2	Metallic minerals (Gold)	40 Holes

6	Community	Kec. Cilograng	1	Metallic minerals (Gold)	20 Holes
7	Community	Kec. Cilograng	1	Metallic minerals (Gold)	25 Holes
		Number of Holes			**240 Holes**

Source: Department of Energy and Mineral Resources of Banten Province, 2018

From the table above, there are 7 illegal Small-Scale Gold Mines with 240 mining pits in the Lebak Regency area. This small-scale gold mining activity uses mercury in its gold management to separate gold seeds from the accompanying rocks and has become customary by traditional miners. The use of mercury in gold processing is the worst practice in small-scale gold mining activities. Inventory activities of mercury use carried out by BPPT and DLH Lebak with the results of the study showed that the number of gold processing sites using mercury in Lebak Regency, Bayah District was 524 locations where 186 locations were inactive and 338 locations were still active. Of the 338 active processing sites in Bayah District, the amount of mercury used is 5,017.43 kg/year or 5,017 tons/year. In addition, it is also known that the use of mercury in Bayah District produces air emissions as much as 822.25 kg / year (BPPT and DLH Lebak, 2018).

The Indonesian government has a strong commitment to eliminate the use of mercury in the Small-Scale Gold Mining sector. This commitment was realized by the signing of the Minamata Convention on Mercury in 2013, the preparation of a National Action Plan and the Enactment of Law Number 11 of 2017 concerning ratification of the Minamata Convention. In addition, the government has also designated the Mercury Reduction and Elimination Program as a National Priority Program. This was responded to by the Lebak Regency Government by forming a Regional Action Plan for Mercury Reduction and Elimination (RAD PPM) in the Small-Scale Gold Mining Sector, as stated in the Decree of the Regent of Lebak Number 660 / Kep.573-LH / 2017.

The Lebak Regency Government established a mercury removal program in the small-scale gold mining sector. Implementation instructions and technical instructions refer to the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number. P. 81/ MENLHK/ SETJEN/ KUM. 1/10/2019 concerning the Implementation of Presidential Regulation Number 21 of 2019 concerning the National Action Plan for Mercury Reduction and Elimination. The implementation of the mercury removal program in the field of small-scale gold mining in Lebak Regency involves various parties. One of them is the Lebak Regency Environmental Agency as the implementer of the program, conducting socialization

activities, taking environmental quality samples at small-scale gold mining sites, inventorying mining, and gold processing businesses in the Lebak Regency area. The Lebak Police, which has the authority to supervise and enforce the law on illegal gold mining activities in Lebak Regency, sub-district officials, village officials and small-scale gold mining communities in Lebak Regency.

Problems and obstacles that can be identified in the implementation of the mercury removal program in the field of small-scale gold mining in Lebak Regency include First, the lack of public awareness of small-scale gold miners on the harmful effects of mercury on health and polluting the living environment. Second, the lack of budget for the mercury removal program in the field of small-scale gold mining in Lebak Regency. Third, there is no monitoring or monitoring from the Lebak Regency Environmental Agency after socialization activities are carried out to see the progress of program implementation that occurs in the field. *Fourth*, the lack of quantity of human resources of the Lebak Regency Environmental Service which oversees spaciousness in the implementation of the mercury removal program in the field of small-scale gold mining. Fifth, the suboptimal transfer of livelihoods to small-scale gold mining communities carried out by the Lebak Regency Government. *Sixth*, weak law enforcement was carried out by the Lebak Police in dealing with illegal small-scale gold mining in Lebak Regency.

Literature Review

Public Policy Implementation

According to Carl Friedrich in Budi Winarno (2016: 20) policy is an action proposed by a person, group or government in a certain environment that provides obstacles and opportunities for policies to overcome in achieving goals and realizing goals. According to James Anderson in Leo Agustino (2008:7) the definition of public policy, in his book Public Policy Making is as follows: "a series of activities that have a certain purpose and purpose and then followed and implemented by an actor or a group of actors related to a problem that is noticed". According to Edwards in Budi Winarno (2016: 155) policy implementation studies are crucial for public administration and public policy. Policy implementation is one of the stages of public policy, between policy formation and the consequences of policy for the communities it affects. If a policy is improper or cannot mitigate the problems that are the target of the policy, then it may fail even if the policy is implemented very well. Meanwhile, a policy that has been very well planned may also fail if the policy is not well implemented by the policy implementers.

According to Edward III in Leo Agustino (2014: 149) in the theorized approach, there are four variables that determine the success of the implementation of a policy, namely:

1. Communication, the first requirement for the effective implementation of policies is that those who carry out decisions must know what they should do. Communication must be precise, accurate, carefully understood by the implementers and consistent. There are three indicators in measuring the success of communication variables, namely: (a) Transmission, good communication distribution will be able to produce a good implementation as well. (b) Clarity, the communication received by the policy implementers must be clear and not confusing. (c) Be consistent, the orders given in the execution of a communication must be consistent and clear.
2. Resources, if implementers lack the resources necessary to implement policies, then even this implementation tends to be ineffective. Thus, sources are an important factor in implementing public policy. Indicators of sources consist of: (a) Staff, which is the main resource in the implementation of policies. Failures that often occur in the implementation of policies are partly due to insufficient, adequate, or incompetent staff in their fields. (b) Information, implementors must know what they should do when they are given orders to perform actions. (c) The authority, the authority must be formal for the order to be enforced. (d) Facilities and physical facilities are also an important factor in the implementation of the policy. Without supporting facilities (facilities and infrastructure) the implementation of the policy will not be successful.
3. Disposition, the attitude of policy implementers is important in the approach to the implementation of a public policy. It consists of: (a) The appointment of bureaucrats, the selection and appointment of policy implementing personnel must be persons who have a dedication to the policies that have been established, especially in the interests of citizens. (b) Incentives, by way of adding certain profits or costs may be the driving factor that makes policy implementers execute orders properly.
4. Bureaucratic structure, bureaucracy as the implementer of a policy must be able to support policies that have been decided politically by coordinating well. As it consists of: (a) Standard Operating Procedures (SOPs) are routine activities that allow employees to carry out activities daily in accordance with established standards. (b) Fermentation is an effort to spread responsibility for employee activities or activities among several work units (Leo Agustino, 2014, 149).

Method

This research uses a descriptive research method with a qualitative approach. Data collection techniques with observation, interviews, and documentation studies. Data analysis carried out according to Miles and Huberman in Sugiyono (2013: 246) activities in data analysis are carried out interactively continuously until complete, so that the data is saturated, consisting of data reduction, display data, conclusion drawing / verification. Using data sources i.e., primary data and secondary data. To test the validity of the data, researchers used source triangulation and engineering triangulation.

Result and Discussion

Small-Scale Gold Mining is one of the important mining issues in the Lebak Regency area. Gold processing is generally carried out by amalgamation using logs along the river flow, near the house or in the yard. This small-scale gold mining activity uses mercury in its gold management to separate gold seeds from the accompanying rocks and has become customary by traditional miners. In addition, these activities become the livelihood of the local community. The use of mercury in gold processing is the worst practice in small-scale gold mining activities, in addition to the lack of equipment, facilities and capital. So it will have a dangerous impact on safety, human health and the environment. Lebak Regency is one of the regencies/cities in Indonesia with the highest mercury emissions and releases in PESK in the extreme category, namely with Hg > 10 MT per year.

The Indonesian government has a strong commitment to eliminate the use of mercury in the Small-Scale Gold Mining sector. The mercury reduction and elimination program became a national priority program. This was responded by the Lebak Regency Government by forming a Regional Action Plan for Mercury Reduction and Elimination in the Small-Scale Gold Mining sector, as stated in the Decree of the Regent of Lebak Number 660 / Kep. 573-LH / 2017. The mercury removal program in the field of small-scale gold mining aims to eliminate the use of mercury and reduce the harmful impact of mercury waste. The target is a small-scale gold mining community. The implementation of the program involves various related parties, namely, the Lebak Regency Environmental Service as the program implementer, the Banten Provincial Energy and Mineral Resources Service, the Lebak Police, the sub-district apparatus, the village apparatus, and the small-scale gold mining community.

Based on observations in the field, researchers found various obstacles that hindered the implementation of the mercury removal program in the field of small-scale gold mining in Lebak Regency. The problems are outlined in the findings outlined according to George Edwards III's public policy implementation model which sees the success of policy implementation based on several indicators, namely, resources, communication, disposition (attitude) and bureaucratic structure, described as follows: ***First*** *Resources,* Aspects of resource adequacy: The Environmental Agency of Lebak Regency, as the implementer of the mercury removal program in the field of small-scale gold mining in Lebak Regency, the human resources are still lacking, especially the field officers, there are only 3 people from the Environmental Damage Pollution Control Section. Financing or budget: The lack of budget for the mercury removal program in small-scale gold mining in Lebak Regency, due to budget cuts due to the Covid-19 pandemic, so that it becomes an obstacle in the implementation of the activities carried out, needs to be increased again. Facilities: The facilities owned are quite good, it's just that it needs to be added such as information banners for dissemination of information related to the program and improvement of operational vehicles.

Second Communication*,* Coordination: The coordination carried out by the Lebak Regency Environmental Service was only at the time of the first socialization activity, namely at the sub-district office by inviting each representative from the sub-district, village apparatus, rt and small-scale gold mining communities. Direct communication: Direct communication carried out by the implementers of the Lebak Regency Environmental Service program is by holding socialization activities to the community at the sub-district office, by inviting every party involved. Indirect communication: The Lebak Regency Environmental Agency has never carried out indirect socialization activities using print media such as information banners or electronic media such as social media. Clarity of the content of the program: The content of information related to the mercury removal program in small-scale gold mining is clear and easy to understand. So that it can be carried out starting from socialization activities and so on.

Third Bureaucratic Stucture*,* Standard Operating Procedures (SOPs): The Lebak Regency Environment Agency does not monitor or monitor, after socialization activities are carried out, to see the progress of the program implementation. This is not in accordance with the standard operating procedures that have been stipulated in the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number.P.81 / MENLHK / SETJEN / / KUM.1 / 10/2019 concerning the Implementation of Presidential Regulation Number 21 of 2019 concerning the

National Action Plan for Mercury Reduction and Elimination. Fragmentation: Each party has carried out its duties as well as possible in the implementation of the mercury removal program in small-scale gold mining in Lebak Regency.

Fourth Disposition, Commitment: The commitment of each program implementer is quite good, starting from the office that carries out socialization activities, sub-district officials, village officials and rt to small-scale gold mining communities. However, in carrying out supervision and law enforcement by the Lebak Police, there is still a lack of firmness in law enforcement carried out to violators of illegal gold mining activities. Because most local people make a living as gold collectors, it is feared that if the closure is carried out, it is feared that there will be mass turmoil that can cause security to be disrupted. Professionalism: Every party involved in the implementation of the mercury removal program in small-scale gold mining, has been carried out as well as possible. Although it is not easy to change the mindset of the PESK people who have been able to use mercury in the gold processing carried out. So, there is a need for strong cooperation with the stakeholders involved. In addition, there needs to be special attention from the government in providing professional transfers to the PESK community.

Conclusion

The results of the study can be concluded that the implementation of the Mercury Removal Program in the Small-Scale Gold Mining Sector in Lebak Regency, is still not optimal because the implementation of the program still has shortcomings such as, lack of awareness of the small-scale gold mining community to participate in the implementation of the program, lack of quantity of human resources, especially service field officers, lack of program budget, no monitoring or monitoring after socialization activities are carried out by the department, weak law enforcement by law enforcement officials to illegal small-scale gold mining activities in Lebak Regency, not optimal transfer of livelihoods of small-scale gold mining communities by the Lebak Regency Government.

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