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SUBMARINE TAILING DISPOSAL SYSTEM: INDONESIA'S POLICY AND FUTURE CHALLENGES

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Abstract: *This research departs from Indonesia's policy and practice on the submarine tailings disposal system, in which there is a legal vacuum in Indonesia legal system. However, Indonesia is part of UNCLOS 1982, which obliged to conform their rules with the regulation in the convention, especially on the protection of the marine environment. This research aims are to examine the current Indonesia's policy and compare it with American and Canadian policies. To visualize the above objective, this research applies normative-empiric legal research, which emphasizes its analysis of primary and secondary legal materials. All collected legal materials are classified, categorized, analyzed and constructed as well as developed through analytical prescriptive elaboration. The utilization of the marine area as a medium of submarine tailing disposal system could be categorized as a land-based source of marine pollution. As one of the biggest archipelago states in the world, Indonesia should have a strict regulation on submarine tailings disposal to prevent the past failure of the system in Buyat Bay, North Sulawesi.*

Keywords: *Submarine Tailing Disposal; Legal Vacuum; Indonesia's Practice; Land Based Source; Marine Pollution*

INTRODUCTION

As a developing country, Indonesia faces the common dilemma of developing countries i.e. that national economy lies on un-renewable natural resources. Un-renewable natural resource mines such as gold, silver, nickel, and manganese is the biggest source of national revenue. Based on Bank of Indonesia reports, the mining industry contributes to 9,4% of the total national revenue. (Central Bank of Indonesia 2006, 13) However, the mining activities are the most destructing and contaminating affects on the environment. Mining and environment are inseparable. There is a saying: "no mining activity without environmental damage".

One of the negative impacts on the environment is mining waste known as "tailing". Tailing is rocks or fine ground waste from the scrapping or extraction of valuable minerals (copper, gold and silver) from mining materials (PT. NNT 2006, 3). Mining materials, both rocks, sand, and soil, after being dug and dredged and separated through a process of grinding. For the separation process is generally the use of chemicals (cyanide, mercury, arsenic, etc.) is most common for the separation process, and the gold ore, copper, or silver are filtered by carbon filters (Amstrong Sembiring 2011).

The process of managing and storing tailings is an important part of implementing a mining project. Tailings produced by mining activities will be moved or placed in a certain space so that it is not harmful to humans, animals, plants, and the environment in general (Ellis and Connoly 2010). As time goes by, the process of tailing disposal or placement has used various methods of disposal: in the rivers, or on the land with tailings dam. The most popular and widely used method today is the disposal of tailings on the seabed (submarine tailing disposals). Mining companies in Indonesia that use submarine tailing disposals are PT. Newmont Minahasa Raya and PT. Newmont Nusa Tenggara (today known as PT. Amman Mineral Nusa Tenggara).

Pollution of the marine environment caused by tailing waste within the submarine tailing disposals system has occurred in Indonesia, in Buyat Bay, North Sulawesi. In the case of Buyat Bay, more than 100 Buyat residents suffered from Minamata disease. They were contaminated with heavy metal arsenic (As) and mercury (Hg), which polluted Buyat Bay. It has occurred since the mercury and arsenic in tailings discharged into the sea. Thus, it will contaminate various types of fish in Buyat Bay which was then consumed by the residents, who mostly work as fishermen.

Based on the Buyat Bay Case, the Government of the Republic of Indonesia ideally prohibits the implementation of the system until the complexity of the marine environment can be understood. Other states that experience environment damages due to the failure of STD are the Philippines, Papua New Guinea, South Africa, Guyana, Spain, and Canada. Canada is the originator of the system experienced environmental pollution due to the failure of the implementation of the submarine tailing disposals system (Coumans 2010, 4).

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In general, this paper tries the practices carried out by developed and developing countries with regard to the STD system by reflecting the practices and failures experienced by the STD in Indonesia, in the perspective of international law and national law. International environmental law is the base of the analysis in order to answer the problems in this paper. If there is environmental pollution and damages, the national boundaries of a country are no longer relevant. Therefore, international environmental law is the right tool to examine this problem.

The international nature of the practice of submarine tailing disposal can be seen from the number of activities carried out by countries, the involvement of multinational companies, and the risk of trans-frontier pollution. If there is environmental pollution that exceeds territorial boundaries, countries will involve the provisions of international law. It is needed to resolve environmental problems between them in the form of bilateral agreements and international conventions.

It is in line with the mission of the World Commission on Environment and Development (WCED) in its report entitled Our Common Future, stating that:

National boundaries have become so porous that traditional distinctions between matters of local, national, and international significance have become blurred. Ecosystems do not respect national boundaries. Water pollution moves through shared rivers, lakes, and seas. The atmosphere carries air pollution over vast distances. Major accidents - particularly those at nuclear reactors or plants or warehouses containing toxic materials-can have widespread regional effects (Report of WCED 1987, 37).

The nature of the sea as connecting medium will cause the pollution could spread to the other territories. The sea pollution always involves more than one state or jurisdiction, thus in its remedies it needs regional and multilateral (Nurbani and Triatmodjo 2011, 7).

The spread of pollution due to submarine tailing disposals has been proven in the case of environmental pollution due to STD in Canada's Canadian Copper Mines. Research shows that as many as 1,000,000 tons of tailings dumped into Rupert Bay spread to another part of the bay, i.e., Quatsiono Sound Bay (Coumans 2010, 5).

ANALYSIS AND DISCUSSION

Submarine Tailings Disposal as Land-Based Sources Marine Pollution
Nature of Land-Based Source of Marine Pollution (LBSMP)

The utilization of the ocean for waste disposal has been particularly a controversial issue. Some consider the ocean as a legitimate receptacle for human and industrial wastes while others wish to preserve the ocean in a state as pristine as possible and therefore oppose any deliberate use of the oceans for waste assimilation (Bewers and Garrett 1987, 105-124).

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Submarine Tailing Disposals (STD) means tailings disposal activities to the seabed. Tailings produced by mining activities are channeled to the seabed using the land pipes and underwater pipes with taking into account certain technical and ecological aspects. The use of pipes as a means of conveying tailings could be used as the basis that STD is one of the land-based source of marine pollution (hereinafter called LBSMP). The definition of LBSMP can be seen in the Paris Convention 1974 on the Prevention of Marine Pollution from Land-Based Source, Article 3 "pollution from land-based sources" means: the pollution of the maritime area:

1. Through watercourses
2. from the coast, including introduction through underwater or other pipelines,
3. from human-made structures placed under the jurisdiction of a Contracting Party within the limits of the area to which the present Convention applies.
4. by emissions into the atmosphere from land or from human-made structures as defined in subparagraph (3) above.

The threat of LBSMP to the marine environment is serious because it mostly affects coastal waters, the most productive area. As it has occurred in Japan, Minamata disease caused by mercury poisoning through liquid waste from a factory, contamination in coastal waters can pose a serious risk to the marine ecosystem and human health (Tanaka 2006, 535-574). Thus, it can conclude that the survival of the coastal populations depends on a good marine environment. LBSMP is the result of an imbalance between human populations and human activities on land and the limited capacity of the marine environment to absorb human waste.

LBSMP is a serious threat to the oceans because these land-based pollutants are growing in nature, from day to day the conditions change and increase, both in quantity and in consequence. The nature of LBSMP is due to the occurrence of LBSMP is parallel with the activities and the number of people on land, the more the number and activities of people on land, the greater the amount of pollutant material and waste produced and discharged into the sea. In other words, the occurrence of this LBSMP is a consequence of human existence and its activities carried out on the land (Triatmodjo 2001, 232).

LBSMP is the most important factor in marine pollution. Seventy percent of the marine environment pollution comes from LBSMP. It gets to the sea through rivers, pipes (sewage systems), from the gutters (Silalahi 2006, 243). Pollutants that are produced on the land move through various small roads such as rivers and canals before finally finding their way to the sea.

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Several regulations and international cooperation to maintain sustainability of the oceans from activities of humankind are:

a. United Nations Convention on the Law of the Sea 1982

UNCLOS, which was adopted in 1982 and entered into force in 1994, to which there are now 168 parties, sets out the binding legal framework for all use of the oceans and the protection of the marine environment. UNCLOS is acknowledged as an 'umbrella convention' because its provisions, being of a general nature, can be implemented only through specific operative regulations in other international agreements. UNCLOS provides a comprehensive framework for co-operation embracing all ocean-related activities and covering bilateral, international, subregional, regional, and global co-operation. Part XII Protection and Preservation of the Marine Environment contains provisions dealing with specific aspects of co-operation (Khalimonov 1999, 5):

- co-operation on a global or regional basis (Article 197);
- contingency plans against pollution (Article 199);
- studies, research programs and exchange of information (Article 200);
- scientific and technical assistance to developing states (Article 202);
- investigation of foreign vessels (Article 226);
- responsibility and liability (Article 235).

UNCLOS 1982 provides a flexible international framework with which existing and subsequently developed instruments governing protection of the marine environment can be harmonized and implemented globally (Khalimonov 1999, 5).

Article 207 provides obligations to the states to prevent marine pollution from land-based sources. The Article stated that:

a. States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including river, estuaries, pipelines, and outfall structures, taking into account internationally agreed rules, standards and recommended practices and procedures.

b. States shall take other measures as may be necessary to prevent, reduce and control such pollution.

c. The state shall endeavor to harmonize its policies in this connection at the appropriate regional level.

d. States, acting especially through competent international organizations or diplomatic conference, shall endeavor to establish regional rules … to prevent reduce and control pollution of the marine environment from land-based sources.

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This above article obliges states to take other necessary steps to reduce and control the LBSMP and try to determine global and regional agreement and standard and to provide recommendations for practices and procedure of preventing, reducing, and controlling LBSMP.

b. Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land-Based Source 1985

The nature of the sea is universally connected; the pollution in certain areas of the sea may spread beyond the state boundaries. Thus, regional or international arrangement is needed to solve the marine environment issues comprehensively.

Other guideline and declarations regarding LBSMP, in the global area, are the Montreal Guidelines 1985. The Montreal Guidelines are suggested as a broad framework for the development of similar agreements in the regions. The agreement is a guideline for the Government, which is not currently bounded by a regional agreement. As a long-term preparation, there is certainly an increasing need for global conventions on pollution from land sources. It is designed to strengthen international institutional arrangements and to ensure harmonization and application of global and regional regulations, criteria, standards, and suggested practices and procedures and also to review the effectiveness of chosen policies.

Montreal Guidelines 1985 defines land-based source pollution and means: (i) Municipal, industrial or agricultural sources, both fixed and mobile, on land, discharges that reach the marine environment in particular From the coast, including from outfalls discharging directly into the marine environment and through run-off; Through rivers, canals or other watercourses, including underground watercourses, and through the atmosphere. Sources of marine pollution from activities conducted on offshore fixed or mobile facilities within the limits of national jurisdiction save to the extent that appropriate international agreements govern these sources. (c)"Marine environment" means the maritime area extending, in the case of watercourses, up to the freshwater limit and including intertidal zones and salt-water marshes; (d) "Freshwater limit" means the place in watercourses where, at low tide and in a period of low freshwater flow, there is an appreciable increase in salinity due to the presence of sea-water.

c. Washington Declaration and Global Programme of Action on Protection of the Marine Environment from Land-Based Activities 1995 (GPA 1995).

Another international law instrument addressing LBSMP is the Washington Declaration and Global Programme of Action on Protection of the Marine Environment from Land-Based Activities 1995 (GPA 1995). GPA 1995 is an instrument that is not legally binding. The aims are

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to prevent damage to the marine environment from land activities by facilitating the realization of the country's duty to preserve and protect the marine environment. The 1995 GPA is designed to be a source of practical guidance for countries to take actions under their respective policies, priorities, and resources.

GPA 1995was designed to assists states to take individual actions or cooperation under their respective policy priorities and resources. This is expected will lead to a reduction, prevention control, and eventually the abolition of marine pollution and also the impact of land recovery.

Achieving the objectives of the Global Programme Actions will contribute to maintaining and, if possible, restoring the productive capacity and biodiversity of the marine environment, ensuring the protection of human health, and promoting the conservation and sustainable use of marine resources (UNEP 2010).

Montreal Guidelines 1985 and Global Programme of Action 1995, both of them are soft law. In the system of international law, soft law is not a source of law as contained in Article 38 paragraph (1) of the International Court of Justice Statute.

Soft law is not a source of material law. It has several weaknesses, such as the presence of principles and guidelines only. Practically, it could not be implemented because it does not provide an implementing clause i.e. soft law is not a binding law. But, soft law has the advantage if it applied internationally, soft law principles can be accepted and practiced by the countries, it can be transformed into customary international law which in turn can become one of the material sources in international law (Silalahi 2001, 138).

Kim Boon describes that "soft law as law in the process of making. It is nascent, incipient, or potential law" (Ramlogan 2001, 4). Soft law can be in the form of declarations, resolutions, a statement of principles, which is morally but not legally binding (Ramlogan 2001, 4-5). In its implementation, the role of soft law has a more convincing basis than just imposing the law directly on a country.

Today, Indonesia is not a state that parties Montreal Guidelines 1985 and Global Programme of Action 1995. Many factors influence the states bound towards certain conventions on LBSMP. LBSMP have a 'national' nature from the respective country. Furthermore, legislation differentiation and national policy complicate states to agree on a uniform approach (Churchil and Lowe 1999, 329).

INDONESIA'S REGULATIONS OF SUBMARINE TAILING DISPOSAL SYSTEM

The utilization of STD in Indonesia that occurs is performed by PT. Amman Mineral Nusa Tenggara, Ltd.Co (PT. AMNT), Batu Hijau Project. PT. AMNT former of Newmont Nusa Tenggara Ltd. Co. They continue the STD that was agreed with the Government of Indonesia, in which the tailing disposals are conducted through pipes and released into Senunu Bay, as much as 120.000 tons per day (Tenggara 2006, 8).

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Legal basis on submarine tailing disposal by PT. AMNT (former PT. NNT) is the Environment Ministry Decree on permitting of STD in Senunu Bay. Before the environment decree on the marine utilization for STD, the Government of the Republic of Indonesia has agreed on the Environmental Analysis Impact of PT. NNT, as concluded with the Ministry of Environmental Decree Number: Kep- 41/MENLH/10/1996 on "Approval of Environmental Impact Analysis of Environmental Management Plan and Environmental Monitoring Plan of Copper-Gold Mining Activities in Batu Hijau and its Supporting Facilities of PT. Newmont Nusa Tenggara in Sumbawa Regency, West Nusa Tenggara Province". Environmental analysis impact permit is a principle permit on tailing management with the STD system.
Several permits and permit prolongations on the STD utilization of PT. Newmont Nusa Tenggara are:

- Ministry of Environment Decree Number 236 Year 2007 on Submarine Tailing Disposal System Permit for PT. Newmont Nusa Tenggara, Batu Hijau Project;
- Ministry of Environment Decree Number 82 Year 2005 on the Extention of Submarine Tailing Disposal System Permit for Batu Hijau Project PT. Newmont Nusa Tenggara;
- Ministry of Environment Decree Number 24 Year 2002 Submarine Tailing Disposal System Permit for PT. Newmont Nusa Tenggara.

AMERICAN AND CANADIAN PRACTICES TOWARDS THE SUBMARINE TAILING DISPOSAL SYSTEM

The failure of the submarine tailing disposal system has occurred in Canada and caused severe environmental damages and needs of 150 years for the recovery, and today the system is forbidden in Canada. In the Copper Island Mine and Kitsault Mine Cases in Canada, the scientific evidence shows that dumping tailing to the deep ocean did not work as it was planned. Tailing from both companies expanded further area than it was predicted. It moves to productive marine areas, expel migratory fish, destroy native species, eliminate endangered organisms, and reduce biodiversity (Coumans 2010, 2).

The spread of pollution due to submarine tailing disposals has been proven in the case of environmental pollution due to submarine tailing disposals in Canada's Canadian Copper Mines. Research shows that as many as 1,000,000 tons of tailings dumped into Rupert Bay spread to another part of the bay, namely Quatsiono Sound Bay (Coumans 2010, 2).

Based on this experience, Canada then emphasized its laws and regulations to prevent pollution from the failure of the submarine tailing disposal system. There are two provisions governing submarine tailing disposal activities in Canada. First, the Canadian Federal Metal Mining Liquid Effluent Regulation, which states that metal mining activities may not dump tailings into the sea. Second, the Canada Fisheries Act prohibits the release of deleterious substances into water that frequented by fish or areas where the fish live. The Canadian Federal Metal Mining Liquid Effluent Regulation has standards regarding the

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limitation of mining effluents from certain metals (liquid waste generated from mining activities) that can be disposed of into environmental media. The maximum limit specified is 25,000 mg / l.

In 2002, Canada issued new strict regulations. The maximum limit that can be disposed with submarine tailing disposal activity is 15,000 mg / l / month. This regulation makes further complication requests for submarine tailing disposal. Submarine tailings disposal applications will be tested with the Canadian Environmental Impact Assessment Act and national-level of environmental regulations that require the Principle of Transparency and public notice for the permit application (Coumans 2010, 2).

In America, the regulation that is mostly relied to most connected to submarine tailings disposal is the Clean Water Act. This law regulates the disposal of waste into American waters. Section 403 regulates that "any disposal of waste from a certain source (a certain point) to US waters or oceans, which is carried out without permission, is illegal. This law expressly prohibits the use of submarine tailings disposal as a tailings disposal option (Coumans 2010, 2).

INDONESIA'S FUTURE POLICY ON SUBMARINE TAILING DISPOSALS

The failure of the submarine tailings disposal system has occurred in Indonesia, Teluk Buyat. According to Teluk Buyat Case, the Government of the Republic of Indonesia should postpone any activities until the applied technology could be optimized and the steps on preventing the damages spread could be known.

The precautionary principles are based on the assumption that the environment is fragile. Science's accuracy in predicting the danger or threat to the environment is limited, and also the availability of process or product that causes less harms to the environment (Triatmodjo 2000, 139). The International Court of Justice recognized the precautionary principle in the case of Gabcikovo-Nagymaros, which stated that the prevention acts are obligatory because the environmental damages are irreversible and also the lack of our ability to restore the environmental damages (Wibisana 2010, 1).

Ideally, the precautionary principle could be implemented not only as the principle of international environmental law. It should be a legal norm that binds the state internationally and becomes a state obligation to adopt this principle nationally. It is important because environment problems ignore state boundaries, and it could impact other states. This principle acknowledged that environmental damages are difficult to repair and require a long restoration periods. Economically, the costs of repairing environmental damages are higher than the costs of preventing environmental damage. This principle emphasizes that, if a state does not understand on the efforts or steps to overcome environmental pollution due to an activity, the activity should not be carried out. This principle gives an obligation to the state to provide a policy basis to be able to anticipate, prevent, and overcome threats that endanger

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the environment. The study of the World Bank Extractive Industry recognizes that the precautionary principle could be implemented to prevent the occurrence of environmental damages. The STD has uncertainty of potential risk to the biodiversity. Thus the World Bank does not provide financing to companies that use this system (Windu Kusworo 2010, 1).

Before adopting Sustainable Development Goals 2030 in the form of Presidential Decree of the Republic of Indonesia Number 59 Year 2017 on Implementation of Sustainable Development Goals, Indonesia must be able to meet each indicator successfully. One of the goals is to preserve life underwater (SDGs 14). The first indicator of SDGs 14 is "by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution" (United Nations, Transforming Our World: the Agenda for Sustainable Development, A/Res/70/1). As its consequences, it is logic if Indonesia regulates the STD in more binding rules such as in the form of Laws.

As stated above, mainly the regulation on submarine tailing disposal in Indonesia is addressed in Minister of Environment Decree. In the hierarchy of Law in Indonesia, the positions of ministry decrees based on Law Number 12 Year 2011 on Hierarchy of Laws are not mentioned as one of the forms of law in Indonesia. Based on Explanation of Law Number 12 Year 2011 on Hierarchy of Laws, ministry decrees are interpreted as regulations determined by the Minister in order to conduct government affairs. There is no regulation on criminal sanctions. Consequently, if there is a breach of the obligations, no legal sanction may be imposed on the subject. It is of utmost importance to regulate submarine tailing disposal in Indonesia in form of laws. The law has more binding regulations than a minister's decree. The binding laws will protect our environment in the future if Teluk Buyat precedent occurs. Indonesia may be shadowing the concluded laws in Canada and America to protect the marine environment from STD activities.

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CONCLUSION

Submarine tailing disposal system as land-based source marine pollution is a serious threat to the marine environment. Land-based pollution is the most serious marine pollution in the world. The land-based pollutants are growing in nature, the conditions charge and increase from day to day. Failure of a submarine tailing disposal system has occurred not only in Indonesia but also in other states severed from the damages, such as Canada. Thus, the system is forbidden in other countries such as America and Canada. In Indonesia, the system remains operated by PT. Amman Mineral Nusa Tenggara, formerly of PT. Newmont Nusa Tenggara. However, compare to other countries, Indonesia has legal problem related to the regulation of Submarine tailing disposal system. Submarine tailing disposal system in Indonesia is regulated by a Minister's Decree which has no legal force to punish the subjects if environmental damages take place. In the future, Indonesia must be able to create laws on submarine tailings disposal systems, in order to protect the marine environment and also to achieve the SDGs 14 by 2030.

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