

# CSR and Environmental Security: Evidence from Tin Mining in West Bangka District, Indonesia

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## 1. Introduction

Indonesian mineral industry has a long-standing history. Gold and silver have excavated since a thousand years ago, while tin and diamond mining started in the 18<sup>th</sup> century (Leeuwen, 1994). Based on world mineral production data from 2009 to 2013 shown that Indonesia ranked as the 2<sup>nd</sup> largest tin producer. Nearly one-third of the world's tin produced in Indonesia. Bangka Belitung Province is the biggest tin producer area in Indonesia, which almost 90 percent of tin derives from this island. Since the occupation of Netherlands of Indonesia in the 16<sup>th</sup> century to the present, tin mining has been becoming a state monopoly through the management of the state owned company, right now named by PT.Timah. Undoubtedly, tin mining has created a new economic zone, which provides employment opportunities, optimizing local resources to support regional economic activity, as well as increasing local revenue through levies and taxes. Therefore, tin mining has accounted for its contribution to the state and local revenue.

Beyond financial benefit, tin mining has criticized for damaging the environment and lead to environmental insecurity. Continuously, environmental insecurity threat health security, economic security, and various community security issues. It has triggered a conflict between mining companies and communities. The most tangible impact of tin mining activities is disused pit-mine. Disused pit mines mostly filled with water coming from ground water, rivers and rainwater, likely natural reservoir. Numbers of disused pit mines has made Bangka Belitung Provinces as one of the highest land damage in Indonesia (WALHI, 2014). In 2003, 554 pit mines identified in Bangka Island and 343 pit mines on Belitung Island. From those numbers, only 162 of disused pit mines has reclaimed (Susanto, 2009). Besides, around 60 percent of forest area in Bangka Belitung Province destroyed by tin mining activities (Susilo and Maemunah, 2009).

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United Nation University on Millennium Project defines environmental security as "the relative public safety from environmental dangers caused by natural or human processes due to ignorance, accident, mismanagement or design and originating within or across national borders." It indicates that the environmental insecurity will not occur if the environment is well-managed. Along with sustainable development efforts, the role of business in ensuring favourable environmental condition becoming the concern of the Indonesian government. In 2007, Indonesian government issued Act No 40 Year 2007 on the corporation that obligates a company to carry out a social and environmental responsibility. The implementation of the act is reinforced by the Government Regulation No 47 Year 2012 on Corporate Social Responsibility (CSR). Both regulations have provided a new strategic role for the company, mainly which engaged in natural resources, in ensuring good environmental quality. Through these laws, companies are required to implement CSR as a form of corporate responsibility.

In response to the law on CSR, PT.Timah as the biggest and the most impacted companies has started implementing CSR reporting practices since 2007 to the present. However, after nine years of CSR implementation, environmental issues still become the biggest problem in tin mining activities. As an example, the number of disused pit mine has increased from 544 of pit mine in 2003 to 589 of pit mine in 2010. Besides, the sea mining activity of PT.Timah has wrecked the fisherman lives. This condition implies to the emergence of community tension through community rejection of PT.Timah mining operations in Bangka Belitung Province. At the end of December 2015, 321 fishermen from West Bangka District was joined with another 1366 fisherman from other districts and held a protest in front of Bangka Belitung Governor Office. The fisherman was demanding for revocation of PT.Timah mining activities in marine water of Bangka Belitung. The aim of this study is to examine the CSR practices of PT.Timah related to environmental policy, environmental performance and environmental governance and to find out why PT.Timah CSR implementation on the environmental issue has not brought a better environmental condition.

## **2. Corporate Social Responsibility, Mining and Environmental Security**

CSR term has begun to use in the 1970s. The idea underpins the concept of CSR that corporations could not act as a separate economic entity anymore, particularly in detachment from the broader society around the company. Therefore, the role of business towards sustainable development through CSR practices has long become a concern of many groups around the world, both academicians, government, NGO or citizens. Along with the world attention toward the existence of CSR, the companies have started to implement best CSR practices following to the ISO and GRI in the reporting practices. ISO and GRI are not intended for management certification. Therefore, every company has a different definition and standard in performing CSR practices.

In conjunction with the international effort in implementing best CSR practices, many kinds of research on CSR has done along with great public criticism over the environmental negligence and violation of human rights by the company. Specifically, CSR practices of the mining company, which specifically focused on

environmental management are still separately carried out in the area of transparency (Wirth et.al, 2016), an environmental assessment (Shvarts, Pakhlov & Knizhnikov, 2016) and cross-sector collaboration (McDonald & Young, 2012). In Indonesia, the research related to the mining company activity, in term of CSR practices, are mostly emphasized on its contribution to the economic development and community development (Suhadi, Febrian & Turatmiyah, 2014). Studies from Shvarts, Pakhlov & Knizhnikov (2016) showed that the environmental conditions are highly dependent on company policy related to the environmental protection. Moreover, lack of transparency, accountability, and stakeholder engagement considered as the cause of conflict between stakeholder which triggers ineffectiveness of environmental policy (Wirth et.al, 2016; McDonald & Young, 2012; Suhadi, Febrian & Turatmiyah, 2014).

Through the literature review, it could be conclude that environmental policy, followed by a good environmental management will result in good environmental performance. Besides, the presence of good environmental governance is necessary for a company to avoid conflict interest that could become a threat to the CSR effectiveness (Figure 1). It also supported by the findings from the field study. The research on the implementation of environmental policy, environmental performance, and environmental governance is needed to understand why and how the company activities determine the environmental security.

Compared to previous studies, this study comprehensively analysed environmental policy, environmental performance, and environmental governance in the CSR practices. Therefore, this study will fill the gap by specifically examine the implementation of CSR practices in addressing environmental issues as a major criticism of the presence Indonesian mining companies. This research will focus on how the company executes their CSR practices through environmental policy and environmental governance.

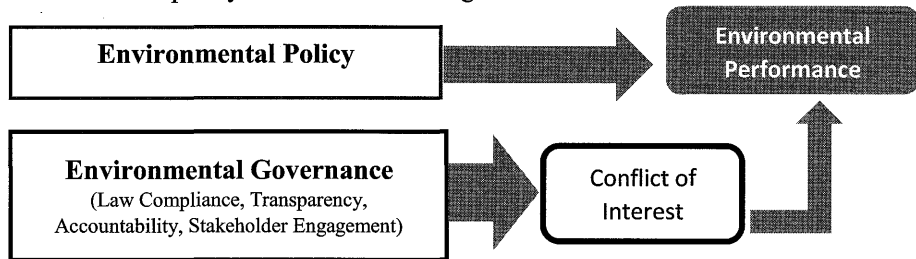


Figure 1. The relation among Environmental Policy, Environmental Performance, and Environmental Governance.

Source: Author analysis

### 3. Methodology

This study uses a qualitative approach with a case study of PT.Timah in West Bangka District. The purpose of qualitative data analysis is that researcher could understand the dimensions related to the problem to answer the question which outlined in this research. Understanding the relations of dimensions which shaped the occurrence problems or conditions is necessary for qualitative study. The researcher did not use a statistical method as in quantitative approach. The

fundamental principle of qualitative data analysis is processing and analysing data which collected from field studies and documentation into systematic, organized, structured, and meaningful information (Yin, 2002).

Semi-structured interview carried out of 20 interviewees which consist of local government representatives (2 respondents), PT.Timah representatives (2 respondents), NGOs which focused on environmental problem (2 respondents) and community (14 respondents). Determination of the respondents conducted by using a snowball approach where respondents recommend someone who is considered to be able to provide the information more precisely and profoundly. Beside interview, this study also used secondary data which collecting from various stakeholders (government, the mining company and NGOs), previous studies (such as an article in journal and report) and other related documents. Data obtained from the data collection activity are processed systematically starting from classifying, reducing, data display and formulate and verifying conclusion. Therefore, data analysis, which carried out in this research is a cyclical and simultaneous process. To avoid bias, the data collection, categorization and classification in this study based on the main principles of ISO 2600:2010 on CSR as indicators for environmental governance. The indicators for environmental performance reflected in emission, waste management, reclamation, and closure plan. Environmental policy is a set of policies which reflects the company's commitment toward environmental protection. Environmental governance is related to the company's activity in optimizing CSR practices through law compliance, transparency, accountability and stakeholder involvement. While, environmental performance is a tangible result and contribution of environmental management practices.

## **4. Result and Discussion**

### **4.1. Tin Mining and Environmental Problems: A Case Study of West Bangka District**

Tin mining in Bangka Island had begun in 1711 which operated by the Dutch company named by Bangka Tin Winning Bedrijft (BTW). BTW is one out of three Dutch mining companies that are a forerunner of PT.Timah. PT.Timah is one of the biggest tin mining company in Indonesia and third-largest tin mining company in the world. Until today, tin mining exploitation areas in Indonesia have practically monopolized by PT.Timah. Especially in Bangka Belitung Province, PT Timah is the single tin mining company which operated until now. In 2016, PT.Timah produced 27,431 tons of tin which counted as 7% of world tin production. PT.Timah has eight activities including inland mining (onshore), sea mining (offshore), metallurgic unit, tin ore washing, tin ore warehousing, power plants, distribution and storage, and laboratory. The mining authority of PT.Timah covers Bangka Island, Belitung Island and Singkep Island with a total area of 519,080 hectares and 104 mining licenses. Only for Bangka Island, 27.56% of the land is PT.Timah mining authority.

One of the biggest tin producers on Bangka Island is West Bangka District. West Bangka District has produced tin for more than 200 years. About 29% of mining licenses of PT.Timah located in this area, with total exploration areas of 106.057 hectares. Geographical position and its tin reserves have considered as

the primary factor in the economic development of West Bangka District communities.

#### 4.1.1. PT.Timah Operation and Environmental Impact: A Big Picture

As a big mining company with eight main activities, PT.Timah has a high risk of damaging environmental quality (Chart 1). Mining processes from land clearing to exploitation has changed the landscape, causing deforestation, as well as changing the river flow and polluting soil, water, and air. Mining waste has contaminated at least 15 major rivers in Bangka Belitung Island, 75% of coral reefs are damaged, and access to clean water is hard for half of the population.

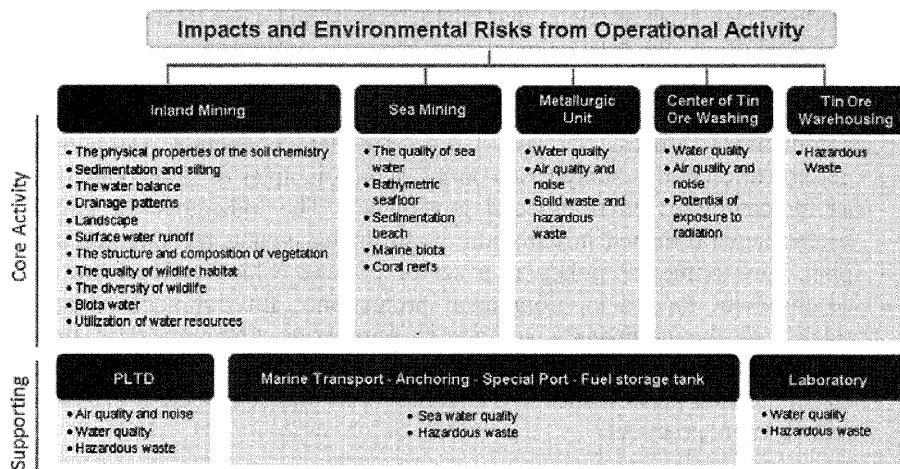


Figure 2. The impacts and environmental risk from PT.Timah operational activity  
Source: Analysis from PT.Timah Sustainability Report

The increasing environmental damage in Bangka Island is also as a consequence of the rampant of illegal mining activities. Informal mining or illegal mining violates the rules by conducting mining in protecting the forest area and destructing coral reefs due to in advanced technology. The increasing number of illegal mining starts in 1998 when PT.Timah and the local government opened artisanal mining practices to boost the local economy, avoids the impact of the Indonesian monetary crisis. PT.Timah handed over their tin mining potential area, which is uneconomical for self-mining, to local contractors and provides them a simple mechanical mining equipment.

#### 4.1.2. PT.Timah and Environmental Problem in West Bangka District

PT.Timah has three main operational activities in West Bangka District, which is inland mining, sea mining, and metallurgic unit. The existence of PT.Timah has regarded as a major source of environmental damage in West Bangka District. Based on Ministry of Environment Report in 2013 shown that West Bangka District calculated to suffer at balance loss around 336 million rupiahs. This outstanding amount was due to health care cost, drinking water costs

and budget for revegetation and environmental reclamation as a consequence of tin mining practices.

#### 4.1.2.1. *The environmental impact of Inland Mining*

Mining activities in West Bangka District have transformed vegetation covered land into the perforated ground with various sizes and topography (Figure 2). The changing of land topography resulted in river flow pattern change. The land cover loss also leads to the increasing of runoff water as a consequence of the land inability to hold rainwater and cause floods. Based on Health Agency of West Bangka District, the amount of pit mine correlated to a high number of malaria cases in West Bangka District. Tin mining activities have also caused deforestation. The total area of PT.Timah mining permit area in the conservation forest of Bangka Island is 3,201.22 hectares which spread in four districts. Based on data from WALHI (2014), about 2,097.91 hectares categorized as C&C<sup>1</sup>. Another 1,103.31 hectares categorized as non-C&C.

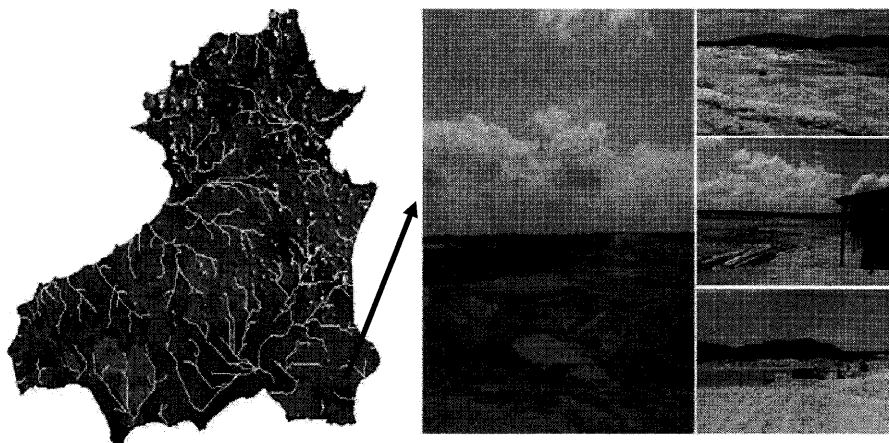


Figure 3. Open pit area in West Bangka District

(Black spot shows the tin mining area, white line shows the river flow pattern)

Source: Compilation of author documentation and Susanto, 2015

#### 4.1.2.2. *The environmental impact of sea mining*

Bangka Belitung coast is one of the central areas of world's coral reefs. Offshore tin mining that uses dredger and suction dredges have led to sedimentation and damaging marine ecosystem. In 2013, a team from Bangka Belitung University (UBB), found that from 41 exploration spot in Bangka Belitung Province, the West Bangka coral reefs categorized as the most severe<sup>2</sup>. From 11 spot of coral reefs, only two spots which classified as medium damage, while another nine spots have been totally damage. Fisherman are the most affected stakeholder from PT.Timah sea mining activities. The quantity of fish in the coastal area is decreasing. During 2011 to 2013, at least three conflicts have identified due to suction dredges operation which resulted in declining of community income. (WALHI, 2014).

“When PT.Timah goes offshore; they will bring dredger and suction dredges with a lot of numbers. While dredger operation has done, suction dredges will start their operation to absorb tin from the seabed, and it will take all day long, never stop. It doesn’t allow us to go to the sea. The number of the fish we caught became fewer and fewer. Fish become hard to get since the condition of the sea is not healthy as before.” ((Darwin, male 47, fisherman)

4.1.2.3. *The environmental impact of metallurgy unit*

Metallurgy unit is an operation unit of PT.Timah which focused on tin ore processing. Tin ore processing involves a series of complicated process that produces associated minerals such as monazite which has large radiation effect. The metallurgic unit operation which builds very close to the residential area has brought a significant impact on the community's health such as dizziness and breathless (Picture 2).

"Once the factory operated, thick black smoke will come out from the chimney. Wind direction during the day is leading to our place. So we have to inhale the smoke from the factory. The smoke has a dreadful stench and causes us a headache." (Darudin, Male 43, small shop owner)

The symptoms of lung cancer due to radiation is similar to the symptoms of lung tuberculosis (Ministry of Health, 2001). In 2011, Health Agency of West Bangka District record showed that it was 203 cases of tuberculosis and increased in subsequent years.

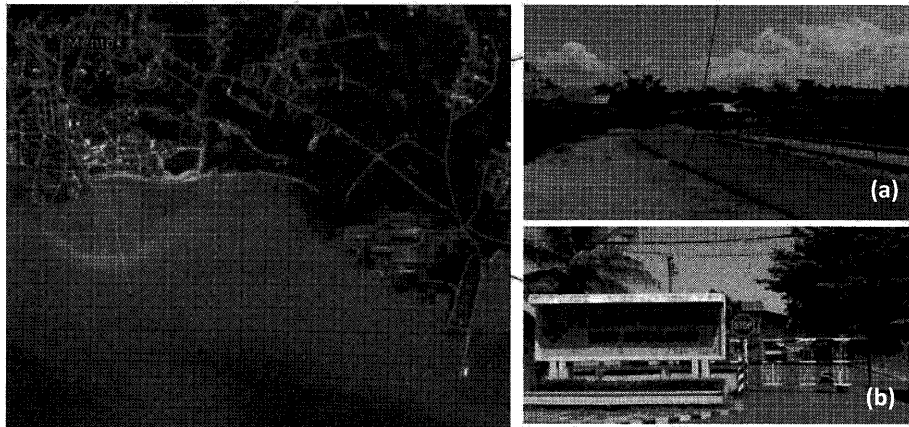


Figure 4. Residential Area (a) and Metallurgy Unit (b) location  
Source: Author documentation

There are four main issues of environmental security in West Bangka District that need to be concerned by PT.Timah in their CSR implementation which is air pollution, radiation from metallurgic unit activity, marine ecosystem damage and land reclamation.

## **4.2. The CSR Practices of PT.Timah on Environmental Protection**

### **4.2.1. CSR Policy on Environmental Management**

Along with the corporate governance policy, CSR practices of PT.Timah has five objectives which comply the law and norms of environmental management; preventing pollution, accidents, and occupational diseases; improving employee skills to maintain the environmental impact control; increasing the awareness of environmental issues; and continuous improvement in term of environmental protection. The company showed their attention in sustaining and improving environmental quality by implementing green mining (mining more environmentally friendly), minimizing the waste that potentially pollutes the environment during mining process (green processing) and carries out the reclamation process.

“Since mining operation planning, we pay special attention to the restoration of environmental quality, especially during post-mining. We try to make the environmental condition as it was. We also expressly stipulate that the mining activity should be carried out only in our mining authority.” (Sain, male 52, representatives of PT.Timah)

Following the environmental policy, PT.Timah has prepared the environmental management annual budget. The total amount for environmental management in 2014 is 5.03 million rupiahs, which decline by 19,2% from 2013. The environmental budget of PT.Timah has never been over than 38% of total CSR fund. The orientation of CSR implementation of PT.Timah is more emphasized on social rather than environmental responsibility.

### **4.2.2. Environmental Performance**

Environmental performance refers to the environmental results that achieve from the overall process of company's activity. This part discusses environmental performance of PT.Timah related to emission, waste management, reclamation and closure plan.

#### *4.2.2.1. Emission*

To reduce the emission, PT.Timah has conducted a quality standard measurement of exhaust gas emissions from the chimney. This activity is implemented to ensure that the exhaust gas does not pollute the air. However, PT.Timah has not implemented the comprehensive measurement program of CO<sub>2</sub> and SO<sub>2</sub> emissions for all lines of the company's operations. Even the chimney has not exceeded the exhaust emissions threshold, but the amount of SO<sub>2</sub> released increasing every year. Based on the environmental regulation in Indonesia, the SO<sub>2</sub> emission threshold is 800 mg/m<sup>3</sup>. PT.Timah SO<sub>2</sub> emission has increased from 38 mg/m<sup>3</sup> in 2013 to 68 mg/m<sup>3</sup> in 2014 and 86 mg/m<sup>3</sup> in 2015.

#### *4.2.2.2. Waste Management*

All of PT.Timah operation produces solid waste, radioactive waste, and effluent waste. Solid waste treated by implementing 3R (Reduce, Reuse, and Recycle) policy in the management and processing of waste. In the case



of radioactive, PT.Timah has received permission storage of radioactive materials in Metallurgy Unit which is valid until November 2017. For treatment of the effluent, the company operates an oil bath trap and waste treatment plant. It has legalized through Minister of Environment Permission No. 179 Year 2009 on Waste Water Disposal Permit. The effluent waste which disposed to the sea is considered to be one of sea pollution activity. Besides, sea mining operation by using dredges and suction dredge have no comprehensive tailing treatment monitoring. This led to severe sedimentation and sea ecosystem damage.

#### *4.2.2.3. Reclamation and Closure Plan*

PT.Timah has prepared the reclamation plan for all operation areas which includes current mining area, ex-mining pit, dumps top soil, ex-mining road, former sediment pond and other supporting facilities. Reclamation conducted both in sea and land. Sea reclamation executed by planting coral reefs and mangroves. While land reclamation conducted by land covering and revegetation. Reclamation process by PT.Timah has considered as a slow reclamation. One of the reason is the policy to dismissed the reclamation processes in 2001 to 2007 due to illegal mining. Illegal miners often reopened the reclaimed land that made company has to stop the reclamation activity to reduce more losses. Rampant illegal miners in West Bangka District caused by job changing from fisherman and farmer to miners. The community job transformation is a consequence of marine ecosystem damage and land degradation which result in declining of fisherman and farmer income.

“The reclamation activity which carried out by the company, as I know, is planting the trees around pit mine. Landfilling is do existed, but rarely. It mostly about planting. Supervision is rarely visible; that is why the local people start to open the mining site” (Alfandi, male 49, NGO)

### **4.3. Environmental Governance**

Environmental governance in this part refers to the environmental management process that includes law compliance, stakeholder involvement and accountability and transparency.

#### **4.3.1. Law Compliance**

The basic requirement of good CSR practices is following the environment rules in the country concerned. In 1992, one year before the enactment of Act No 53 Year 1993 on Environmental Impact Assessment, PT.Timah has been preparing environmental management plan which revised in 2007 following the requirement of the act. The revision includes environmental management plan and environmental monitoring plan. After the enactment of the Act No 40 Year 2007 on Corporation and Government Rule No 47 Year 2012 on CSR, PT.Timah has included environmental management as a part of CSR practices. Generally, PT.Timah can be considered following the rules laid down by the government. In 2014, PT.Timah has awarded as a company with fair environmental management by Environmental Ministry of Indonesia. Awarded as fair environmental

management means that PT.Timah still lacks on several aspects in term of managerial issue, which identified in reporting practices and monitoring system. In addition, community involvement in the process of environmental management is not conducted comprehensively. The community is involved only in socialization including the socialization on environmental impact assessment and CSR program socialization which considered as a formality by some other stakeholder.

#### 4.3.2. Accountability and Transparency

Accountability of PT.Timah has shown by the annual report of PT.Timah which can be access through the website. The dissemination of environmental budget and its implementation to the public through dialogue or socialization are not carried out. It becomes one of major criticisms of the public and NGOs towards PT.Timah.

#### 4.3.3. Stakeholders Involvement

One of the key features behind the success of CSR practices is that the programs reflect stakeholder expectation. Hence, PT.Timah has created stakeholder relationship management as the important points in corporate governance which includes a regulator, employee, consumer, supplier, and community. Each stakeholder has a different interest towards the company operation. For that reason, PT.Timah divides engagement pattern based on stakeholder interests. In general, stakeholder engagement is partially implemented. Stakeholders are not involved in overall environmental management processes with an explicit scheme such multi-stakeholder forum. Therefore, PT.Timah is hardly criticized for the negligence of a good and responsible mining practices, especially concerning stakeholder involvement and transparency.

“We don’t know the real reclamation program, it most about planting, we never participated in their activity...no socialization” (Azwar, male 45)

“If the story about PT.Timah, I forget exactly, there was once a meeting, in the regent place, related to fisherman. We discussed about environmental degradation which caused by illegal mining and suction dredges. Maybe one year ago. The result of the discussion were ignored. No response, they are still doing the sea mining. The meeting attended by 50 peoples from Tanjung Laut, Tanjung Sawah, all fisherman. There was no respond from the Regent” (Azmi, male 40, fisherman)

### **4.4. PT.Timah and Environmental Challenges**

Generally, PT.Timah has tried to adapt the environmental management accordance with the provisions of mining law and environmental law in Indonesia. However, the implementation of environmental management by PT.Timah is considered not optimal. Lack of transparency, lack of monitoring processes and lack of stakeholder involvement indicated as a reason behind ineffectiveness of PT.Timah CSR implementation. Besides, the rampant illegal mining has exacerbated environmental insecurity in West Bangka District. The widespread illegal miners cannot separate from PT.Timah policy in 1998, which allowed the local contractor to conduct their mining activities in PT.Timah mining area. Illegal mining operations are becoming wider since the enactment of Indonesian Law

No.22 Year 1999 about local government and Ministry of Industrial and Trade Regulation No.146/MPP/Kep/4/1999 which allowing artisanal mining activities.

As a respond to rampant illegal mining, PT.Timah has started to discipline the illegal miners in their operational area, developed a small-scale mining plan which conducted in PT.Timah mining area (later called by mining partner) and intensive reclamation. The small-scale mining conducted by PT.Timah partner to manage small tin reserves which randomly scattered. The tin ore production of the mining partners will resell to PT.Timah. The mining partner is a mining community group that emerged based on the needs of PT.Timah. Therefore, PT.Timah has a responsibility to the mining partners activity. Until 2015, there are 592 of PT Timah mining partner in Bangka Belitung Province, both offshore and onshore. To protect the environmental condition, PT.Timah has set a guidance on a good mining practice for mining partners.Unfortunately, with the number of mining partners, PT.Timah could not perform thorough environmental monitoring processes to all mining partners. Therefore, the environmental condition does not show significant changes. The increasing number of pit mine, air pollution, and coral reefs damage have still become a big environmental problem in West Bangka District (Table 1). This condition has increased public tension and resulted in a rejection of the existence of PT.Timah in West Bangka District.

Table 1. Environmental Impact of PT.Timah Activities, Environmental Policy, and Result

<b>PT.Timah Operation</b>	<b>Impact</b>	<b>PT.Timah Policy</b>	<b>Result</b>
Inland Mining	The number of pits mine	Reclamation	Slow reclamation, Larger number of pit mine
	Deforestation	Rehabilitation	Slow rehabilitation
Sea Mining	Coral reefs damage	Rehabilitation	Slow rehabilitation
Metallurgic Unit	Emission	Chimney emission measurement	The increasing of annual SO2 released

Source: Author analysis

## 5. Conclusion

The mining company is no longer to be able a single actor in addressing environmental issues. Public apathy, especially illegal miners, in maintaining the condition of the reclaimed area is an evidence of lack of socialization and collaboration. To maintain the quality of environment, this study showed that stakeholder engagement and collaboration are needed. Based on the exploration, this study offers some recommendation to ensure environmental security through stakeholder engagement and collaboration. This study proposed that stakeholder engagement must be conducted in three level of activities which consist of environmental plan, mining processes, and post-mining activity through stakeholder dialogue. Stakeholder dialogue could be initiated by the local government or PT.Timah with a clear scheme. The aim of stakeholder engagement in the environmental plan is to identify the environmental impact of mining, defining the role of every stakeholder in environmental protection and

creating an external monitoring system. In the mining processes, stakeholder engagement is conducted through dialogue and collaborative action. The aim of dialogue is to monitor and evaluate the specific and present impact of mining activity on the environment. While collaborative action is to mitigate the impact of mining activity as early as possible. The dialogue in post-mining activity is to build an agreement on how the reclamation will be conducted. While collaborative action is to optimize environmental performance of closure plan activity.

### Endnotes

<sup>1</sup> C&C is an abbreviation of Clean and Clear. This term widely used after the press releases of Ministry of Energy and Mineral Resources in 2011, following many inquiries from various parties regarding the status of mining permit area. The company with C&C status means that the issuance of the mining permit is accordance with mining law and vice versa. The function of C&C is to ensure that the company has already obeyed the law.

<sup>2</sup> <http://bangka.tribunnews.com/2013/10/15/kerusakan-terumbu-karang-di-babar-paling-parah>

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