



Environmental Disclosure as Corporate Social Responsibility: Evidence from the Biggest Nickel Mining in Indonesia

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ABSTRACT

The company's business operations in Indonesia are very dependent on the company's intention on the environment, especially mining companies. Mining companies are responsible not only for economic materiality aspects but also for environmental and social aspects for the sustainability of operations. In its interactions with the business and social environment, vulnerable mining companies are in the spotlight if they do not carry out disclosure of environmental responsibility proportionally in accordance with generally accepted standards. The purpose of this study is to qualitatively analyze the descriptive disclosure of Environmental Disclosure as a form of corporate social responsibility of PT. Vale as the largest Nickel mining company in Indonesia which also contributes number 2 nickel in the world. The results of this study state that environmental disclosure analysis of PT. Vale has not been fully optimized for all aspects of the surrounding community.

Keywords: Environmental Disclosure, Environmental Economics, Corporate Social Responsibility

JEL Classifications: Q53, Q57

1. INTRODUCTION

Modern economy has raised various environment related issues such as global warming, eco-efficiency, and industrial activities and has also caused direct impact on surrounding environment (York, et al. 2003), (Hertwich, 2005), (McCright & Dunlap, 2000). The environmental condition worldwide, including that in Indonesia (Kusminingrum, 2008), is currently quite alarming, in which one of the concerned life issues is global warming (Lorenzoni & Pidgeon, 2006), (McCright & Dunlap, 2000). Company and other business organization usually only apply profit maximization concept (one of the concepts adopted by the capitalists), but at the same time they violate the consensus and principles of profit maximization itself (Suartana, 2010). This concept also encourages company to continuously find a way to perform efficient production (Kocka, 2015). The impacts of violation on such principles comprise, among others, lack of attention of environmental management program, low environmental performance and company's low

interest in environmental conservation (Kosajan, et al., 2018), (Du, 2018), (Omer, 2008).

In Indonesia, mining company is one of the industrial sectors of which production activities are directly related to the environment and also the second largest source of Indonesian income following the agricultural sector (Putra, 2018). Existing mining activities in certain area will cause environmental impact on the area around mining location (Salomons, 1995), (Li, Ma, 2014). As an effort to reduce and control any negative impacts of mining activities, performing environmental management covering an integrated effort in environmental utilization, regulation, maintenance, supervision, control, and development are necessary (Rondinelli & Berry, 2000). There are some examples of cases related to arising issues since company pays less attention to its surrounding environmental and social condition in its operation, especially company of which activities are related to natural resources management (extraction). For example, PT. Freeport

Indonesia, as one of the biggest mining companies in Indonesia located in Papua of which operation has started from 1969, is not free from prolonged conflicts with the locals until now, either in relation to customary communal land, custom violation, or social and economic inequality (Whitmore, 2006). The Buyat Bay Pollution Case, in which tailing is dumped to the seabed causing sea pollution, resulting in decreasing fish catching and declining quality of locals' health resulted from the operation of PT. Newmount Minahasa Raya, which has become not only national, but also an international issue (Leimona & Fauzi, 2008). Similarly, conflict and violence occur because of environmental pollution and social issues related to the operation of PT Caltex Pacific Indonesia in Duri, Riau Province, in which the people demand compensation with regard to the negative impacts of its operation on the worsening economic, health and environmental condition (Mulyadi et al., 2003).

Based on the cases above, social and environmental issues not well regulated by a company evidently causes very big impacts, that a goal to gain profit in business aspect turns into multiple losses instead. Therefore, social and environmental management right now cannot become a marginal issue and is placed in curative stage, an aspect considered unimportant in company's operation. Corporate social responsibility (CSR) is an important aspect a company must carry out in its operation. This is not merely fulfilling regulations and laws for mining companies as set forth in the Law of the Republic of Indonesia No 22 year 2001 and Laws of the Republic of Indonesia No. 40 article 74 year 2007. In awareness of impacts resulted from its operational activities, company should pay attention to such impacts and participate in protecting and caring the environment of surrounding society as stakeholder. This may be performed by organizing social activities as a form of company's social responsibility to surrounding environment commonly known as CSR. Company's social responsibility is a voluntary responsibility without coercive sanctions for any party that does not perform it (Frederiksen, 2018), (Ranängen & Lindman, 2018).

PT. Vale, a company which operates in mining industry and is one of the main nickel producers in the world, serves to be the object of this research. PT. Vale Indonesia produces nickel from laterite ore processed in an integrated mining and processing facility located in Luwu Timur Regency. PT. Vale apparently contributes to the structural increase of Luwu Timur's APBD (Regional Budget), which is the 2nd highest regional budget after the capital city of South Sulawesi Province (LuwuTimur.go.id, 2018). As a company which relates to public interest, PT. Vale Indonesia consistently makes effort to makes advancement as well as provides benefit for public welfare and surrounding environment, particularly in avoidance of negative issues or sentiment among the society related to the negative impacts resulted from its operational activities. As an effort to integrate all stages of operational activities with environmental management, PT. Vale has incurred a budget of 6,432 million USD in 2010 for the sulfur emission reduction, hydroelectric power plant and mining land reforestation programs (Vale.com, 2016). Besides environmental impact issues, PT Vale also organizes programs for the society covering educational, health and training programs (Vale.com, 2016). In

its process of operational activities, PT. Vale's effort to fulfill its social responsibility has not optimally solved the environmental impact related issues. Environmental issues do not only cover land and green land in the area. Negative impacts like air and water pollution affect the mining area, and small rivers which lead to Lake Matano also change and bring mud, which leads to extinction of some shell species (Chichy, 2017)

Although PT. Vale has established hospital for the welfare of people who need health facilities, however its contribution to the environment remains questionable. Ease of reaching environmental issues in the green land and on the land is expected to be the reason. Air pollution issue is indeed difficult to solve because of limited equipment. However, as a responsible company for the environment, PT. Vale, Tbk must solve such environmental issue. This may also be performed by communicating suggestion of safe distance the people should consider to avoid the pollution. This research is objectively directed to examine how PT. Vale's Environmental Disclosure is as a form of CSR.

2. LITERATURE REVIEW

2.1. Stakeholder Theory on CSR

The stakeholder theory states that a company is not an entity which operates only for its own interest, but it must provide benefit to its stakeholders. Therefore, the existence of a company is greatly influenced by support given by stakeholders to the company (de Gooyert et al., 2017). The stakeholder theory is a theory which describes to which parties (stakeholders) a company is held responsible (Tullberg, 2013). Based on the stakeholder theory's assumption, a company cannot be separated from the social environment and the organization's management is expected to perform activities deemed important by the stakeholders and to re-report such activities to the stakeholders (Tullberg, 2013). In addition, the stakeholder theory assumes that organizational accountability is not limited only to economic or financial performance, thus a company needs to voluntarily disclose its social activities and expense information related to its environmental activities held mandatory by the authority (Yang & Bentley, 2017). Disclosure of financial, social, and environmental information is a dialog between a company and its stakeholders and provision of information of its activities which may change perception and expectation (Adams & McNicholas, 2007). Such disclosure is made with expectation to fulfill stakeholders' need for information and to gain support from the stakeholders for a company's survivability. The better a company makes CSR disclosure, the stakeholders will provide more support to it for any activities aiming at enhancing its performance and achieving its expected profit. The CSR concept has started to be known since 1970s and commonly known as the stakeholder theory. The term Stakeholder is first introduced by Standford Research Institute in 1963 (Harrison & Freeman, 1999). According to Freeman, stakeholder is defined as an organization, group or individual that may be influenced by and influence the goals of an organization.

2.2. Legitimation Theory

Legitimation theory is a theory often used particularly in relation

to environmental social and accounting areas. Even if there is strong pessimism proposed by many researchers, this theory has offered a real point of view of society's voluntary recognition of a company. (Widiawati & Raharja, 2012), (Badjuri, 2011) propose that the legitimation theory is based on the definition of implied social contract between social institution and the society. The legitimation theory suggests company to ascertain that its activities and performance is acceptable to the society. The legitimation theory is another theory upon which CSR is based and is closely related to the stakeholder theory. Legitimation will shift along with environmental and societal change where a company is located (Suchman, 1995). Company will continuously make effort to ensure that it operates under any existing norms in the society or environment where it is located (Deegan, 2004). In addition, Legitimation of organization may be viewed as something given by the society to a company and as something desired or searched by a company from the society which will become potential benefit or resource for it to survive (Mia & Al Mamun, 2011).

2.3. Triple Bottom Line Concept

John Elkington through his book "Cannibals with Fork, the Triple Bottom Line of Twentieth Century Business" develops the Triple Bottom Line concept in 1997 with the terms economic prosperity, environmental quality and social justice. Elkington proposes his view that a company which wants to survive must pay attention to the "3Ps". Besides pursuing profit, a company must also pay attention to and be involved in fulfilling people's welfare and actively contribute to environmental preservation (planet). Profit is the most important element and the main goal of any business activities. Profit itself is in essence additional income which may be used to ensure company's survivability, while activities which may be performed to boost profit comprise improving productivity and making cost efficiency, thus company will be competitively superior in providing maximum added value (Elkington, 2013), (Elkington, 1998). In awareness of society's position as company's important stakeholder, that their support is highly necessary for company's existence, survivability and development, as an integral part of environmental society, company needs to be committed to attempt to provide them the best benefit. It should be realized that company's operation potentially impacts on the society, thus company needs to perform any efforts related to the society's needs. Environment is anything related to all aspects of human life (Elkington, 1998). Human relationship with environmental is a causal relationship, that if human take care of the environment, the environment will give them benefit (Elkington, 1998).

2.4. Environmental Disclosure, CSR in Indonesia Mining Manufacture

There are many factors which encourage company to perform environmental management acts, such as: Regulatory Demand, cost factors arising from complaint about company's products, thus high cost is demanded for production supervision, stakeholder forces, competitive requirements under ISO 9000 and ISO 14001. Company faces many pressures with regard to the environment from various pressures faced by the company. The pressures may be divided into two categories: First, pressures related to regulation consisting of Global Policy, Government Regulation, Environmental Law, fiscal measurement and environmental

institution; second, pressures related to market orientation, such as competitor, investor, customer, stakeholder and stockholder. Mining Business is partially or entirely stages of activities in the course of mineral and coal research, management and operation covering general investigation, exploration, feasibility study, construction, mining, processing and refining, transportation and disposal as well as post-mining activities (Article 1 point 6 Law of the Republic of Indonesia No.4 year 2009 on Mineral and Coal Mining). Mining has some characteristics, which are non-renewable, relatively risky and its operation causes higher environmental impacts, both to physical and environmental conditions, than the operation of other commodities in general (Husted & Sousa-Filho, 2018) & (Mathuva & Kiweu, 2016)

Even though, there are many environmental impacts during exploration, but main mining environmental impacts take place during its exploitation and utilization as energy. These environmental impacts may be in physical form such as deforestation, water contamination (such as river, lake and sea) and contamination of air for energy and may also be in social form, constituting people's loss of livelihood since their living is initially derived from forest products or those mining products. CSR or CSR is the commitment of company or business realm to contribute in sustainable economic development by noting CSR in emphasizing on the balance of attention between economic, social and environmental aspects (Holme & Watts, 1999) & (Pearce, 2013). CSR is a concept that an organization, particularly company, has a responsibility to consumers, employees, shareholders, community and the environment in all aspects of company's operation. CSR is an organization's mechanism to voluntarily integrate attention to the environment and social into its operations and interactions with stakeholders more than merely organization's responsibility in the field of law (Holme & Watts, 1999). Disclosure in relation to financial statement means that a financial statement must provide adequate information and explanation of the results of a business unit's activities. Therefore, such information must be complete, clear, and appropriately describing any economic occurrences which may affect the business unit's operational results (Ulum, 2008). There are two types of disclosure in financial statement: Mandatory disclosure, which is information which must be disclosed by as issuer regulated by the capital market regulation of a state and voluntary disclosure, which is disclosure voluntarily performed by company while it is not required by any existing standards. Social disclosure in Indonesia is classified into voluntary disclosure.

Some big companies, especially those registered in the capital market and which directly affect the environment, have voluntarily disclosed their performance of environmental management (Omer, 2008). Besides, the environmental management performance reports submitted by company to environmental institution are currently in the form of Compliance Report with format and terms hardly understood by both common people and any parties with non-environmental profession. Therefore, information of an informative compliance report of environmental management needs to be made available for the public. One of the reporting standards as the framework for social accounting, audit, and reporting is the global reporting initiative's (GRI) Sustainability Reporting Guidelines. GRI is an international organization which

generates most reporting standards used for sustainability reporting (Brown, 2011).

3. RESEARCH METHOD

This qualitative research collects the data using field survey (interview, observation and documentation) by involving some informants from PT. Vale who are responsible for waste, air and energy aspects, with support of informants who are responsible for the surrounding community programs aspect of PT. Vale as well as observing financial reporting (Putra, 2018). The research employs GRI with score 0 and 1 as its assessment indicator. The indicator GRI (Brown, 2011) contains the following aspects:

1. The energy aspect is measured with direct energy usage from primary energy resource, indirect usage from primary source and energy saving through conservation and efficiency enhancement.
2. The water aspect is measured with total water collection per source, percentage and total reused and recycled water volume.
3. The biodiversity aspect is measured with future strategy, act and plan to manage impacts on biodiversity.
4. The social aspect is measured with basic characteristics, scope, and effectiveness of each program and practice performed to assess and manage any impacts of operation on the society at the start, during and at the end of operation.

4. RESULTS AND DISCUSSION

4.1. Energy Aspect

The fuels in use include high sulphur fuel oil (HSFO) and high speed diesel (HSD), used for the operation of heavy equipment and transport vehicles. In addition, coal serves to be dryer and HSFO is used for Production furnace. Electricity is utilized as the source of energy of purification furnace and also other supporting activities. The need for fuel is supplied by third party, while the need for electricity is supplied

Table 1: Fuel consumption

Type of Fuel	Unit	2017	2016	Δ %
HSFO	Barrel	1,637,673	1,556,034	(5)
HSD	Litre	74,344,040	77,619,865	(4)
Coal	Dry Metric Ton	370,613	383,558	(3)

Table 2: Calculation of tax on collection and utilization of groundwater in 2016

Place of Surface Water Collection	Flow meter		Difference in number of flow meter	Scale per unit of flow meter	Total Water Collection	
	November 1 st 2016	December 1 st 2016			Gallon	M3
Utilities – Reservoir	11,090,502,664.0	11,270,982,352.0	180,479,688.0	1 Gal	180,479,688	683,115.62
Salonsa – A	663,268.7	668,379.7	5,111.0	10,000 Gal	51,110,000	193,451.35
Salonsa – B	693,199.0	697,681.2	4,482.2	10,000 Gal	44,822,000	169,651.27
Helai – A	23,104.6	23,755.7	651.1	1,000 Gal	651,100	2,464.41
Helai – B	819,467.1	833,108.1	13,641.0	1,000 Gal	13,641,000	51,631.19
Helai - Sorowako Baru	574,931.6	602,729.3	27,797.7	1,000 Gal	27,797,700	105,214.29
Helai - VDM	1,088,921.7	1,113,161.0	24,239.3	1,000 Gal	24,239,300	91,745.75
Balantang Port						
Total surface water collection of the period November 2016 (M3)						1,297,273.88
Total surface water collection of the period November 2016 (M3) - previous month						1,291,277.01

by three hydroelectric power plants (PLTAs) classified as renewable energy with installed capacity of 365 Mw. The total cost for HSFO increases, particularly caused by price factor. Meanwhile, the use of HSD decreases because of better rainfall rate than previous year, thus the company does not need to use diesel power plant. The price of coal is relatively stable; even if the price is high, the volume of coal in use for coal conversion project decreases (Table 1).

4.2. Water Aspect

This part explains collection and utilization of groundwater, measured based on 2016-2018 tax calculation (Tables 2-4).

4.3. Waste Aspect

The results of interview and observation with Informant 1 as the person responsible for waste treatment are as follows (Table 5):

4.3.1. Total waste treatments

“There are up to One Hundred Waste Treatments, with Chronosix treatment is the biggest one.”

4.3.2. Type of waste treatment

“..Utilities Waste Treatment, comprising domestic waste, and here hospital waste, housing waste, Helain and mining waste. Domestic waste, hospital waste, all related to bacteria are waste containing bacteria.”

4.3.3. Hospital waste

“Hospital Waste Treatment starts from defika waste, medical waste, and then Air emission comes out to become Defika Amusenata Waste, all of them are delivered to Surabaya”

4.3.4. Problems faced

“Up to date, we have not faced any problems, since we use computer system in waste treatment”

4.4. Air aspect

Table 6 shows the Results of Monitoring of PT. Vale’s Chimney. *“All of the competencies must be passed, for example on electrostatic precipitation (EsP), the goal of ESP system application to make fume/emission emitted to the atmosphere not containing solid materials”*

Table 3: Calculation of tax on collection and utilization of groundwater in 2017

Place of Surface Water Collection	Flow meter		Difference in number of flow meter	Scale per unit of flow meter	Total water collection	
	December 1st 2017	January 1st 18			Gallon	M3
Utilities – Reservoir	13,507,201,657.0	13,708,475,678.	201,274,021.	1 Gal	201,274,021	761,822.17
Salonsa – A	6,178.1	11,834.0	5,655.9	10,000 Gal	56,559,000	214,075.82
Salonsa – B	742,639.2	746,656.1	4,016.9	10,000 Gal	40,169,000	152,039.67
Helai – A	33,725.1	35,104.7	1,379.6	1,000 Gal	1,379,600	5,221.79
Helai – B	978,201.4	992,848.6	14,647.2	1,000 Gal	14,647,200	55,439.65
Helai – Sorowako Baru	919,079.9	947,512.4	28,432.5	1,000 Gal	28,432,500	107,617.01
Helai – VDM	370,430.3	394,047.1	23,616.8	1,000 Gal	23,616,800	89,389.59
UT Shop	117,002,960.0	132,793,192.0	15,790,232.0	1 Gal	15,790,232	59,766.03
Balintang Port						
Total surface water collection of the period December 2017 (M3)						1,445,371.72
Total surface water collection of the period November 2017 (M3) - previous month						1,435,971.70

Table 4: Calculation of tax on collection and utilization of groundwater in 2018

Place of Surface Water Collection	Flow meter		Difference in number of flow meter	Scale per unit of flow meter	Total Water Collection	
	February 1st 2018	March 1st 2018			Gallon	M3
Utilities – Reservoir	13,917,070,734.0	14,110,044,023.0	192,973,289.0	1 Gal	192,973,289	730,403.90
Salonsa – A	17,514.1	22,782.3	5,268.2	10,000 Gal	52,682,000	199,401.37
Salonsa – B	750,345.7	753,769.6	3,423.9	10,000 Gal	34,239,000	129,594.62
Helai – A	36,341.6	37,415.7	1,074.1	1,000 Gal	1,074,100	4,065.47
Helai – B	1,007,164.7	1,020,451.6	13,286.9	1,000 Gal	13,286,900	50,290.92
Helai - Sorowako Baru	975,963.4	1,000,828.8	24,865.4	1,000 Gal	24,865,400	94,115.54
Helai – VDM	417,854.2	438,354.7	20,500.5	1,000 Gal	20,500,500	77,594.39
UT Shop	145,333,344.0	160,027,120.0	14,693,776.0	1 Gal	14,693,776	55,615.94
Balintang Port						
Total surface water collection of the period February 2018 (M3)						1,341,082.14
Total surface water collection of the period January 2018 (M3) - previous month						1,448,304.92

Table 5: Waste treatment quality measurement result

Parameter	Unit	Quality standard	2017		2016	
			Lowest	Highest	Lowest	Highest
Chromium valence (Cr6+)	Mg/1	0.50	<0.05	0.092	<0.05	0.08
Chromium total (CrTotal)	Mg/1	0.50	0.010	0.294	<0.005	0.026
Total suspended solids (TSS)	Mg/1	200	1.08	146	<2	17.40
Nickel soluble	Mg/1	0.50	0.01	0.294	0.01	0.30

Table 6: Results of Monitoring of PT. Vale’s Chimney

Parameter	Quality standards	2017		2016	
		Lowest	Highest	Lowest	Highest
Drying furnace	250 mg/Nm ²	24.40	172.00	91.91	113.70
Reducing Furnace	250 mg/Nm ²	8.19	85.10	13.10	101.00
Electric furnace	250 mg/Nm ²	62.80	190.00	28.50	246.00

4.5. Biodiversity Aspect

1. Strategy and Measures in the management of impacts on biodiversity

Nursery is the place where forestation or seed planting is performed for replanting in the mining area which does not contain nickel anymore. Informant 2 as the person responsible

for the Nursery explains a little of the Nursery and the process of forestation.

4.5.1. Nursery

“This Nursery is part of Mining Support, we are part of the support, nickel is collected by mining personnel, and mining process has been performed, forest will be first destroyed and its

form is changed, and after the forest has disappeared, our team will enter the area for forestation”

4.5.2. The process

“When the mining activities have ended, that the ore has been entirely extracted and nothing left for extraction, we will enter the ex-mining location upon recommendation of mining official, and our duty is to rehabilitate it.” “the first is border, kapolraid, after border, the mining land or its soil is taken, until no nickel is found and we will perform forestation, in which we will plant plants on the opened lands”

4.5.3. Forestation process

“Before planting, seedlings are first panted n greenhouse, where we have multiplied plants and cuttings”

4.5.4. Mycorrhiza

“Seedlings are planted, and mycorrhiza is inserted into the taken soil, thus the mined soil will contain mycorrhiza, which will fertilize the land”

4.6. Society/social aspect

The Society aspect in PT. Vale is located in external office, in which the public service center serves economic, educational and health sectors. (Informant 3) a person responsible for the programs performed by PT. Vale Tbk. The strategy used in social management, particularly for the society is PTPM (Society Integrated Development Program).

“...this PTPM document is arranged based on working assets, that there are important assets of the company, and the third is to identify any problems encountered, problems between the company and the people.

4.6.1. Economic sector

“Before arranging a strategy, we first study the issues faced by the people. They generally have difficulty in fertilizer, and we provide them solution, teach them to make fertilizer by using and utilizing surrounding natural resources. The next general economic issue is Small and Medium-Sized Enterprise, in which the problem is with legality, business legality, market, and so forth,”

4.6.2. Health sector

“We observed that government’s basic services are inadequate, and we attempt to synergize with the government to build health facilities with source of fund from the company”

4.6.3. Educational sector

“We still focus on PAUD (Early Childhood Education) since it lacks of attention here.”

4.7. Issues

“We daily receive complaint letters related to people’s damaged agricultural land, turbid river flow, people’s health issue, and it’s our duty to attempt to solve such complaints.”

4.8. People’s Response to PT. Vale’s Operational Impacts

One of the society figures who become sample in this research is a 64 years old Informant.

4.8.1. Company’s effects on the society

“There must be pros and cons. The existence of PT. Vale is beneficial that it helps the society, particularly in Educational sector and provision of job to bachelors of original inhabitants in this area. Its existence is certainly bad for those with profession of farmers and fishermen, since their activities are often disturbed by mining activities.

4.8.2. Labors

“I once participated in demonstrations against PT. Vale’s injustice in local labor absorption aspect. Many people were not employed by PT. Vale. However, after those demonstrations, PT. Vale changed its policy. The labor aspect is dominantly derived from indigenous people of Soworako area.”

4.8.2. PT Vale’s involvement in society programs

“Not all promises of society programs are fulfilled, but only a few of them.”

4.8.3. Company’s programs distributed to the society

“Generally clean water, lighting, early childhood education program.”

4.8.4. Environmental Impact

“The real environmental impacts are air pollution and eflagon impact on Lake Matano since many people are fresh water fishermen.”

According to the interviews above, the researcher makes justification by comparing the informants’ comments and the people’s comments, in which the people demand the company to employ surrounding people, while the informants state that employment is made with thorough recruitment of potential workers. Ahmad and Sulaiman (2004) propose that legitimation theory is based on social contract definition implied between social institution and the society. This means that PT. Vale has entered into a contract with the society by giving them benefit through distribution of programs and working program support made by the society. In addition, after mining operation, the company performs reforestation by planting plants commonly growing around the environment in Green House, comprising common plants and herbs, which may be utilized by the society as medicine.

5. CONCLUSION

PT. Vale has been employing the CSR program since 2013 until now. In this case, based on GRI with regard to CSR, some aspects are applied by the company comprising energy, water, waste, air, biodiversity, and society/social aspects, each of which with respective responsible person. The total water collection

is 1,291,277.01 L and increases for 1,435,971.70 L in 2017 and keeps increasing in 2018 with a capacity of 1,448,304.92 L from January to April. This water collection constitutes water needed by the company for its operation including clean water used by every city and or village in Sorowako region. Chronosix waste as the highest Waste Aspect, which is mining waste, increases from 0.08 in 2016 to 0.092 in 2017 and the quality standard is 0.10.

The Air Aspect must, during treatment, meet or pass *cyclom asmererata* content from dust particulates coming out from funnel. The company also monitors and measures the quality of funnels of drying furnace, reducing furnace and smelting furnace. These monitoring and measurement are performed by accredited independent laboratory, in accordance with regulation of minister of environment of the republic of Indonesia No. 4/2014 on the quality standards for emission.

The Biodiversity Aspect, an aspect in this Nursery, is a place where forestation or planting of seedlings is performed for replanting in no-nickel containing mining area in order to reset green nature. With regard to the society social aspect, throughout 2016, the social program in Sorowako focuses on the continuation of the Society Integrated Development Program (PTPM) 2013-2017 which relies on the Village Partner Program (PMDM), Strategic Partnership and relationship with stakeholders. PT. Vale also evaluates a number of activities and performance of Regency's Integrated Team, considering that it must have issued PTPM for the second 5-year period of 2018-2022 in 2017. The strategy used in the social management particularly to the society is the PTPM (Society Integrated Development Program). The programs distributed by the company to the society are related to economic, educational and health issues. The issues faced by the company are hospital's inadequate capacity and complaints from the society with regard to agricultural issues. The environmental disclosure program is expected to be enhanced, effective and appropriate.

Mining company's social responsibility program, especially that of PT. Vale is expected to provide solution for both short-term and long-term social aspect and environmental aspect.

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