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Pertamina's Implementation of Environmental, Health & Safety Policy for Environmental Excellence

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ABSTRACT

Pertamina is the national energy company of Indonesia with the main energy business being oil and gas. Geothermal is one of Pertamina's renewable energy business that has been developed since the early 80's. The geothermal operation has been a model in the implementation of the Environmental, Health & Safety (EHS) Policy in the journey to environmental excellence. Implementation of a corporate policy for EHS has been crucial in supporting the goal of Pertamina to become a world-class national energy company. Pertamina has been the leading company in Indonesia among all the other companies (state-owned, public, or private) in environmental excellence. This is proved by dominating the Gold PROPER rating from the Ministry of Environment and Forestry in the last 3 years. The programs also suppports the Sustainable Development Goals commitment of the Government of Indonesia especially goal 1, 3, 4, 6, 7, 9, 12, 13, and 15.

1. INTRODUCTION

In an effort to minimize the impact of industry to the environment, the Indonesian Ministry of Environment and Forestry implements a program to assess company performance in environmental management or better known as PROPER. PROPER has been around since 1997, and has evolved from a simple form of control assessment criteria to reduce water pollution into multiple criteria that carry out continuous improvement in the form of resource efficiency, community development, and encourage internalization of environmental and social costs into the business.

As the national energy company of Indonesia with the main business being oil and gas, Pertamina also carries out geothermal development as one of Pertamina's renewable energy business that has been developed since the early 80's. The geothermal operation initially consists of several operating steam fields that sells geothermal steam to power plants operated by other entities, and since 2008 Pertamina also operates power plants (a total project scheme) as the Kamojang Unit 4 power plant has come to operation. Other power plants have also been commercially operated since then such as Kamojang Unit 5, Ulubelu Units 3 & 4 and Lahendong Units 5 & 6.

Pertamina has been part of the PROPER assessment since 2002 with the number of operating unit and subsidiaries assessed continually growing. PROPER has five ratings namely Black, Red, Blue, Green, and Gold as the highest rank. Black and Red ranking indicates noncompliance with environmental regulations, and Blue ranking indicates compliance with environmental regulation. While Green and Gold ranking shows that the company has consistently carried out environmental management beyond what is required by regulations. This assessment is conducted annually on various companies throughout various industry with Pertamina's operation units and subsidiaries among them. As an energy company mainly engaged in the oil and gas sector, Pertamina cannot deny the negative impacts that it causes to the surrounding community and environment where it operates so it is necessary to implement strategic measures for operation units and subsidiaries to be carried out to maintain environmental sustainability. PROPER also encourage companies to implement programs that support the national sustainable development goals (SDGs).

2. PROPER

The Corporate Performance Rating Program, in Bahasa Indonesia acronym as PROPER, is the so-called environmental excellence program of the Indonesia Ministry of Environment and Forestry that is packed up in the form of surveillance activities and provision of incentives and/or disincentives to the management of businesses and/or activities. The PROPER awards aim to drive companies to comply with environmental regulations and achieve environmental excellence through the integration of sustainable development principles in production and services, the implementation of environmental management systems, 3R (reduce, reuse, recycle) of solid waste and hazardous and toxic waste, energy efficiency, resource conservation, biodiversity protection, and conduct ethical business responsibly through community development programs (Reliontoro, 2012).

The initiation of PROPER program is inseparable from the clean river program (*Program Kali Bersih*-PROKASIH). An important lesson drawn form PROKASIH was that the conventional environmental approach—command and control—was not effective to drive improvement of environmental compliance in industries. At the beginning of PROKASIH, the environmental law enforcement system was weak, the regulatory systems inadequate and the capacity and number of environmental inspectors were limited. In the 1990s, it was difficult to expect industries to comply with regulations and invest money to build WWTPs (Waste Water Treatment Plants). Even if companies were investing, it was difficult to expect them operate the WWTPs properly (Reliantoro, 2012).

The command-and-control approach would be effective if the existing system is capable of ensuring that all regulated entities comply with environmental regulations. Another important lesson from PROKASIH was that it was more effective to target 10% of the industries that disposed high pollution load for more stringent surveillance. Surveillance will be effective if it evaluates on selective control targets, i.e. industries that pose the most significant impact on the environment. A question then arises, about why industries

that are under surveillance and in the same weak environmental law regime showed very different levels of compliance. There were industries that after being surveyed displayed a remarkable leaping performance of environmental management; they were very concerned and put the matter as one of their main priorities. On the other hand there were industries that are stagnant, did not put effort into managing the waste they generated, have no regard on polluted rivers and did not care at all about any reprimands from environmental inspectors.

The condition occurred due to the nature of the conventional management approach (command and control), which involves only two actors, namely the government as the inspector and the industry as the inspected party. In accordance with the law of action-and-reaction, if inspection is carried out strictly, the inspected party responds by adhering to the rules or pretend to comply when inspected. Conversely, if supervision is weak, the inspected party feels free to act arbitrarily and tends to violate the rules (Reliantoro, 2012).

If the process of surveillance—formal law enforcement requires a huge time and cost for both parties, in which both sides have to confront each other to prove their arguments, the surveillance by the public and the market goes more subtle and in accordance with basic human nature. As social beings, man interacts and requires recognition or reputation for his existence. Industries that do not operate in a responsible way can be punished by the public by not providing a "social license". Without a social license, industries cannot operate in a comfortable manner, even at certain situations they have to pay a high price to handle the disharmony with its surrounding and in their relations with the community. Time, energy and assets that should be used to generate profits must be exhausted to deal with social problems. Industries as the personification of people in them will feel uncomfortable if being alienated from their social environment. The market will punish companies that have an environmentally bad reputation through their supply-and-demand mechanism. Environmentally conscious consumers will choose products and services that are environmentally friendly. These consumers grow steadily along the increasing public awareness toward environmental protection. Industries that have a bad reputation in environmental management will be dumped by the market. If they are listed in the stock market, their value will be depreciated because it is considered to have high business risks. Risks due to the possibility of paying compensation for pollution and environmental damage claims, or even pay the litigation is very high. Shareholders do not wish to lose their money to clean up such problem (Reliantoro, 2012).

Previous studies on the effect of public disclosure to environmental performance in developing countries has concluded that public disclosure can motivate firms to reduce pollution by enhancing pressures generated by external stakeholders including consumers, shareholders, regulators, community groups, and the judiciary, and by improving companies' internal information about pollution control and the actions they can take to implement them (Afsah, 2013).

Based on this, PROPER is developed with basic principles, the PROPER participants are selective, i.e. for industries that have a significant impact on the environment and care about their reputation or image. PROPER make use of the public and the market to put pressure on industries to improve their environmental management. The community and the market are educated by providing credible information to choose products and services that are more environmentally friendly and putting pressure on industries that are polluting the environment to improve the environmental performance. The information about a company's performance is communicated by using certain colors to make information stick and can be easily understood by the public (Reliantoro, 2012).

The ratings of business performances and/or activities are made of:

a) Gold is for businesses and/or activities that have consistently demonstrated environmental excellence in terms of production or service processes, conducting business ethically and responsibly towards society.

b) Green is for businesses and/or activities that have performed environmental management beyond compliance through the implementation of environmental management systems, efficient utilization of resources and adequately implement community development programs.

c) Blue is for businesses and/or activities that have performed environmental management as required in accordance with any applicable laws.

d) Red denotes that the environmental management effort does not meet the requirements stipulated in the law.

e) Black is for businesses and/or activities that intentionally perform any act or omission that leads to pollution or environmental damage and violations of laws and regulations applicable or not carrying out administrative sanctions handed down to them.

Compliance ccriteria is the integration of regulation regarding:

- Environmental permits and environmental impact assessment
- Water pollution control,
- Air pollution,
- Hazardous waste management
- Land degradation criteria for mining industry

Nine area of beyond compliance assessment:

- Summary of environmental performance report (Sustainability Reporting)
- Implementation of environmental management systems

- Energy efficiency
- Emission reduction and alternative energy utilization
- Water conservation and pollution load reduction
- 3 R hazardous waste
- 3 R solid waste
- Biodiversity protection
- Implementation of community development

3. SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The Sustainable Development Goals (SDGs) are a global action plan agreed upon by world leaders, including Indonesia, to end poverty, protect the planet and ensure that everyone enjoys peace and prosperity. The SDGs are 17 Goals that are expected to be achieved by 2030 (figure 1). These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another (UN, 2019).

Figure 1: The 17 Goals of the SDGs

Each goals can be described as follows:

Goal 1: End poverty in all its forms everywhere

Goal 2: End hunger, achieve food security, and improved nutrition and promote sustainable agriculture

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5: Achieve gender equality and empower all women and girls

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10: Reduce inequality within and among countries

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12: Ensure sustainable consumption and production patterns

Goal 13: Take urgent action to combat climate change and its impacts

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

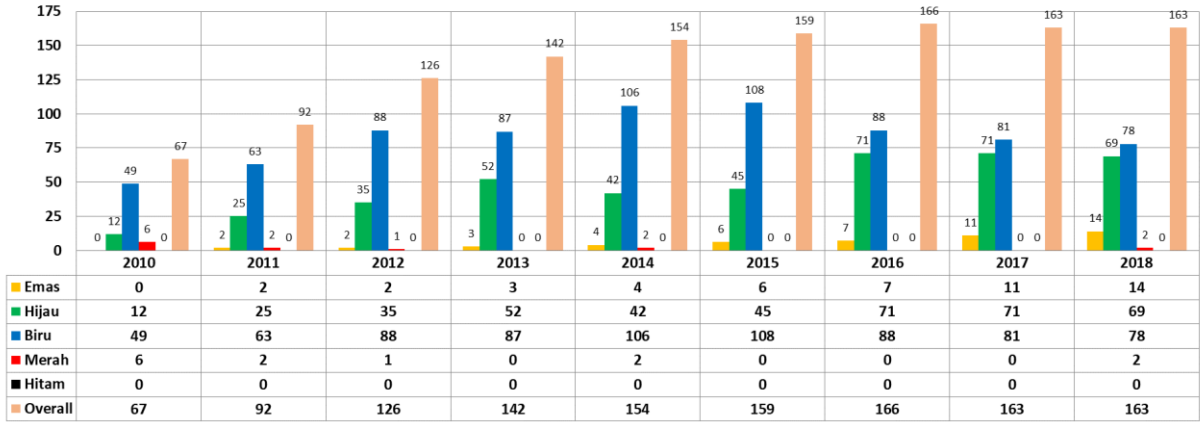
Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Each goal has defined measurable targets and indicators that has been developed by Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) and agreed to, as a practical starting point at the 47th session of the UN Statistical Commission held in March 2016. There is a total of 232 indicators for the 17 goals (UN, 2019).

4. PERTAMINA'S CONTRIBUTION TO SUPPORT INDONESIA'S COMMITMENT TO SDGS THROUGH "PROPER"

Since participating in the PROPER program, Pertamina has continually showed an improvement trend by achieving more beyond compliance ratings (Green and Gold) and reducing non compliance ratings (Red and Black). Figure 2 below shows the number of operating units and subsidiaries that participate in PROPER, and the number for each PROPER ratings.



	2010	2011	2012	2013	2014	2015	2016	2017	2018
Emas	0	2	2	3	4	6	7	11	14
Hijau	12	25	35	52	42	45	71	71	69
Biru	49	63	88	87	106	108	88	81	78
Merah	6	2	1	0	2	0	0	0	2
Hitam	0	0	0	0	0	0	0	0	0
Overall	67	92	126	142	154	159	166	163	163

Figure 2 PROPER Ratings for Pertamina from 2010-2018

Prior to 2011, Pertamina's highest rating was Green. The first Gold rating was achieved in 2011 with Kamojang Geothermal Field among the two operating unit to receive such rating. The other one was Badak LNG plant. Kamojang consistently achieved Gold PROPER rating for the subsequent years, which is an extraordinary achievement that only a few have achieved.

Pertamina has dominated the Gold PROPER rating in the last 3 years that can be seen in the chart below (Figure 3).

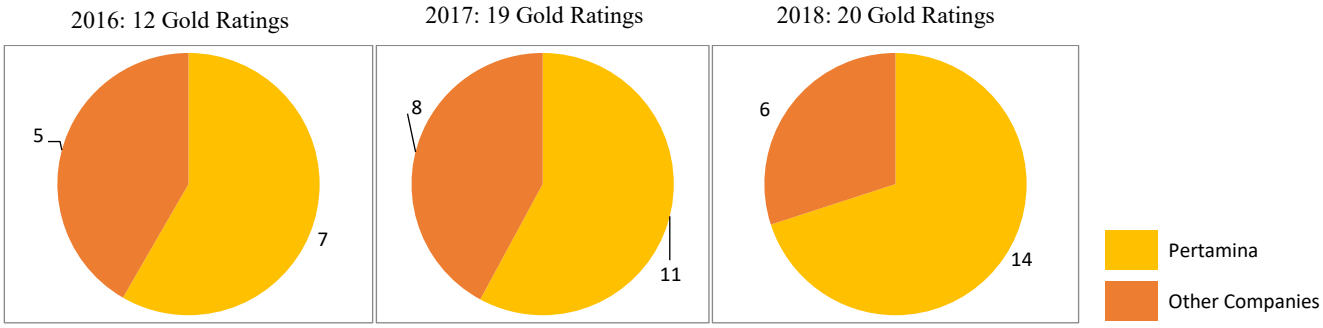


Figure 3 Number of Gold PROPER Ratings for Pertamina v.s. Other Companies 2016-2018

Aligned with the PROPER program, we have listed which program supports the SDGs from Pertamina's Geothermal Areas namely Kamojang, Ulubelu, and Lahendong in table 1.

Table 1 Mapping of Resource Conservation Program with the Sustainable Development Goals (Pertamina Geothermal Energy, 2018)

No	Program	SDGs **Indicator**	
		Goal Number	**Goal Description**
1	Providing electricity access for poor people	1.4.1	Proportion of population living in households with access to basic services
2	Health service assistance focusing on improving maternal & child nutrition and	1.3.1	Social protection systems: proportion of population covered by

	children with disability		social protection systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work injury victims and the poor and the vulnerable
3	Revitalization of subunits public health care facilities (*Puskesmas Pembantu*)	3.1.1	Reduce the global maternal mortality ratio: Maternal mortality ratio
		3.2.1	Preventable deaths of newborns and children under 5 years of age: Under five mortality rate
		3.2.2	Neonatal mortality rate
4	- Vocational training for youth prisoner with specialization in music - Vocational education programs for adults	4.4	Increase the number of youth and adults who have relevant skills including technical and relevant skills
5	- Supporting educational infrastructure: Society learning center -*Pusat Kegiatan Belajar Mengajar* (PKBM) Annur - Green school programs in Ulubelu and Kamojang	4.a.1	Build and upgrade education facilities: Proportion of schools with access to (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes;
6	Providing access to water supply	6.1.1	Access to safe and affordable drinking water for all: proportion of population using safely managed drinking water services
7	- Modification of sampling tools to reduce water usage - Utilization of geothermal condensate for startup and filling the water basin cooling tower	6.4.2	Level of water stress : freshwater withdrawal as a proportion of available freshwater resources
8	- Clean Development Mechanism Gold Standard (CDM-GS) for Geothermal Power plants: a. Kamojang Unit 5 b. Ulubelu Units 3&4 - Verified Carbon Standard Lahendong Units 5&6	9.4.1	CO_2 emission per unit of value added
9	- Condition Based Monitoring (CBM) and maintenance programs: a. oil purification and replacement b. inspection schedule - Modification of laboratory tools and methods a. Inductively Coupled Plasma (ICP) b. Ion Chromatography (IC) c. Portable NCG analyzer - Chemical tank containers replace the drums	12.4.2	Management of chemicals and all wastes: Hazardous waste generated per capita and proportion of hazardous waste treated by type of treatment
10	- Eco brick, plastic bottles and waste banks (waste bank management, including training for local communities) - Digital programs: a. Seamless Asset Management System b. Paperless office program - Arduino geothermal well monitoring	12.5.1	Reduce waste generation through prevention, reduction, recycling and reuse: National recycling rate, tons of material recycled
11	Installation of Solar Cell system for water pond and well cluster lighting	7.2.1	Affordable and Clean Energy
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting
12	Brine and retention pond management using gravity for injection wells (siphon method).	7.2.1	Affordable and Clean Energy
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting
13	Utilization of steam from brine flushing as a turbine drive for lighting paths connecting cluster C to cluster H	7.2.1	Affordable and Clean Energy: Renewable energy mix
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting.
14	Utilization of waste heat using thermoelectric.	7.2.1	Affordable and Clean Energy: Renewable energy mix
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting
15	Application of Indirect heat exchanger method as a dryer for some villages near operation sites	7.2.1	Affordable and Clean Energy: Renewable energy mix
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting

16	Utilization of hydraulic ram pump as a source of clean water supply for offices	7.2.1	Affordable and Clean Energy: Renewable energy mix
		13.2.1.(a)	Climate Action: Green house gas emission reduction reporting
17	Sustainable potato production programs: a. Sterilization of coco peat media using geothermal steam for seeding potatoes b. Vocational training for local farmers	13.2.1 (a)	Climate Action: Green house gas emission reduction reporting
		4.4	Increase the number of youth and adults who have relevant skills including technical and relevant skills
18	Kamojang eagle conservation center	15.5.1	Action to reduce the degradation of natural habitats, halt the loss of biodiversity; red list index
19	- Seeding development of endemic plant Kamojang - Re-vegetation program of endemic plant Kamojang	15.2.1.	Progress towards sustainable forest management

5. CONCLUSION

From the discussion above it is seen how Pertamina's EHS policy is carried out by the operation units and has been able to achieve significantly higher beyond compliance PROPER ratings (Green and Gold) compared to other companies and supports the SDGs through various programs especially SDGs Goals 1, 3, 4, 6, 7, 9, 12, 13, 15.

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