

Pertamina Geothermal Energy (PGE) Ulubelu's Implementation Strategy towards Environmentally Friendly and Sustainable Business Development through Integration of Innovative Programs with Local Communities

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ABSTRACT

In 2015, PGE Ulubelu was rated BLUE (comply to regulation) in its first participation in Company Performance Rating Program in Environmental Management (PROPER) annually conducted by Ministry of Environmental and Forestry of Indonesia. PROPER evaluates company's performance in various environmental aspects (environmental management implementation, energy efficiency, hazardous waste management, domestic waste management, emission reduction, water efficiency and wastewater load reduction, biodiversity, and community development) and reward the performance using color scheme, with BLACK being the lowest and GOLD being the highest. Through several changes in environmental management and innovations in environmental aspects, PGE Ulubelu was awarded GREEN (beyond compliance, second after GOLD) in 2017 for the first time. Transformation in top-level management perspective of the importance to delivering business excellence while keeping the environmental aspect intact was the main contribution of its first GREEN PROPER award. In addition to this strategy and expanding the innovation to reach the immediate community, the company once again awarded GREEN in 2018 with significant score boost from 333.5 to 553.25 in span of 2 years. Most innovations focus on the utilization of technology using waste produced from the company's activities to increase resources efficiency and to give benefits for local community.

1. INTRODUCTION

PROPER was first introduced as PROKASIH (Clean River Program) in early 90s which main focus was to reduce river contamination in Indonesia. PROKASIH then developed to target more environmental aspects such as hazardous waste management and emission control and renamed as PROPER. Since its first establishment in 2009, several regulations had been made to regulate this specific matter with the newest being Minister of Environment Indonesia Regulation Number 3 issued in 2014 about Performance Rating Program in Environmental Management.

The assessment, conducted annually, to rate company's performance in PROPER uses color scheme as follow:

1. **GOLD** – The company has consistently performed, for at least 3 years in a row, at the top of their sector for environmental management system in many aspects and gives significant contribution to immediate society through Corporate Social Responsibility (CSR).
2. **GREEN** – The company exceeds the compliance level proven by implementation of environmental management program in several environmental aspects (environmental management implementation, energy efficiency, hazardous waste management, domestic waste management, emission reduction, water efficiency and wastewater load reduction, biodiversity) and gives contribution to immediate society through community development.
3. **BLUE** – The company complies with environmental regulations emphasize on environmental permitting documents, wastewater management, hazardous waste management, and emission control.
4. **RED** – The company does not comply with one or all of the environmental regulations listed above.
5. **BLACK** – The company has received RED two times in a row and is proven to contaminate the environment and to violate the law.

The assessment system is done as follow: Firstly, MoEF selects the participant for PROPER certification (not all companies are selected). Secondly, all the participated industries must submit several documents and evidence to proof their compliance with the regulation for a period of one year. As of 2019, they have to input their data online to the official website prepared by MoEF called SIMPEL. If they have submitted all required data without any findings, they automatically receive BLUE, otherwise they get RED. MoEF then choose several companies to continue for GREEN PROPER assessment. All the selected potential GREEN awardee must submit evidence (called Green Documents) to proof their efforts on exceeding the compliance level of environmental management systems on 8 different aspects. After they have submitted, the documents will be assessed by independent assessment consultant (typically from university), selected by MoEF, to then their score will be compared (normally distributed) with other companies from the same sector. If the score is at the lowest 25% at the bell curve, the company receives BLUE. The company receives GREEN if the score is at the highest 75% at the bell curve. Finally, top candidates with the highest 25% score for each sector will move forward for GOLD PROPER assessment.

PGE Ulubelu's first participation in PROPER began in 2015, in which the company received BLUE. In the following year, the company aimed for GREEN. However, the company did not make the cut and eventually received blue with a total score of 333,5 (lowest 25% at that time). Several improvements had been made after the event to receive GREEN for PROPER certification.

2. IMPLEMENTATION PLAN AND STRATEGY

2.1 Problem Identification

Environmental management improvement team had been formed since PGE Ulubelu's first participation in PROPER. The team of 8 people itself consisted of employees from different departments or divisions in correspond with environmental aspect assessed in PROPER. A framework using McKinsey 7-s model was developed with several adjustment to identify findings (positive and negative) with the existing environmental management improvement team as can be seen in Table 1.

Table 1: Problem Identification for Environmental Management Improvement Team's Improvement Strategy Using McKinsey 7-s Model.

Criteria		Findings
Hard elements	Strategy	<ul style="list-style-type: none"> No clear strategy to align PROPER with company's core business (-) There was no policy review related to PROPER (-) Most existing environmental improvement programs were not linked with requirement from PROPER's criteria (-)
	Structure	<ul style="list-style-type: none"> Existing environmental management improvement team did not have clear coordination (-) No clear schedule for monitoring and evaluation (-) Lack of support from top management (-) Data collection was difficult (-)
	Systems	<ul style="list-style-type: none"> No clear schedule for monitoring and evaluation (-) Lack of support from top management (-)
Soft elements	Shared Values	<ul style="list-style-type: none"> Employees outside of the team did not understand the importance of PROPER to support company's target (-) Company's target for PROPER was embedded in all employees' key performance indicator (KPI) (+)
	Skills	<ul style="list-style-type: none"> Most members did not have adequate and proper training related to PROPER (-)
	Style	<ul style="list-style-type: none"> No clear leadership (-) Lack of support from top management (-) Members were cooperative (+)
	Staff	<ul style="list-style-type: none"> Most members did not have adequate and proper training related to PROPER (-) Some members were not familiar with PROPER (-) Most members were young (aged between 25-35) (+)

From Table 1 above, it is clear that the root cause of the problem is the lack of support from top management. This might have happened due to the lack of understanding of PROPER itself since policy review and analysis to align it with company's core business had never been done. There was not a specific employee assigned in environmental management improvement team to do policy review and to deliver to top management. This, however important it was, if done only by one person would be dangerous for the continuity of the improvement as what was needed to be built is a system. What was important is to clearly identify the duty for this position, not just find the right person. The main duty for the specific position is to coordinate the needs of environmental management improvement team to top management and to build communication between them. Therefore, the deliverable result must have been communicated to all employees via top management, not by the coordinator.

2.2 Strategy plan

In order to answer the negative finding, a strategy plan was made. The strategy plan considered continuity and sustainability of the environmental management improvement team and the company.

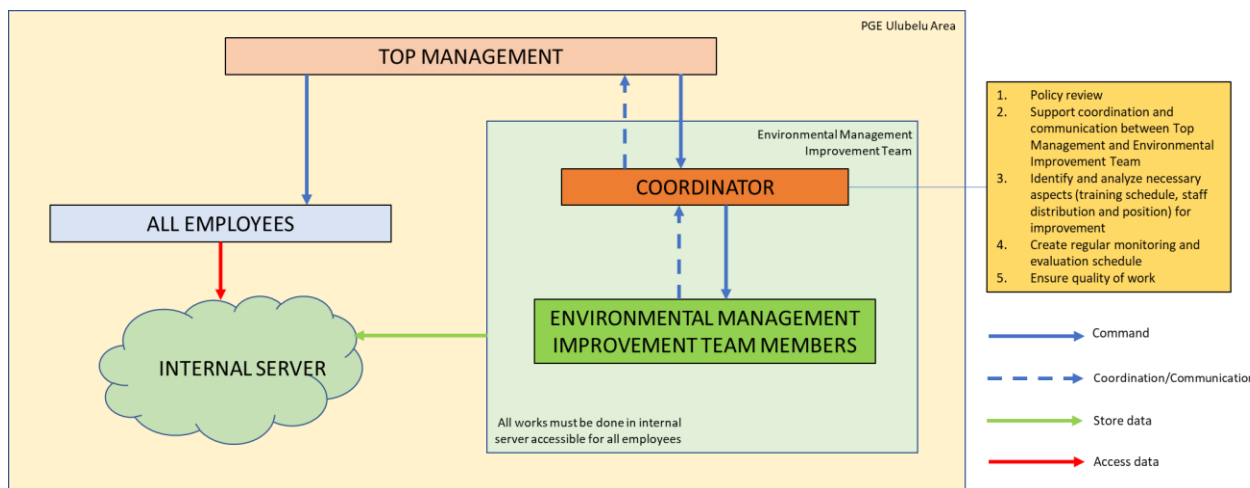


Figure 1: PGE Ulubelu Area's Strategy Plan for Sustainability and Continuity of Environmental Management Improvement.

The strategy is simply assigning a person to do important duties especially in building communication with top management and in ensuring the quality of work from the team. To make sure the sustainability and continuity of the programs, all data must be stored inside the cloud system or internal server that is made accessible for all employees. The data must first go through quality check to minimize misleading information. Top management can ask every employee to support the environmental management improvement team and to make changes inside of the team if necessary. The implementation of the strategy initiated in 2017. This strategy has never been defined beforehand and has transformed the workflow to improve environmental management.

3. DELIVERABLE RESULT

Effectiveness of the strategy plan can be measured by the improvement in scores for PROPER assessment. In its first participation in 2015, the company did not submit Green Documents. Only in 2016 when it was first being asked to submit the documents. Hence, the score comparison can only be done since then. Table 2 and Figure 2 below show score comparison overall and for each aspect respectively from 2016 to 2018.

Table 2: Increasing Trend of Overall Score for PROPER GREEN Assessment.

ASPECT	2016	2017	2018
OVERALL	333,5	465,75	553,25
TREND	0%	+39,65%	+18,79%

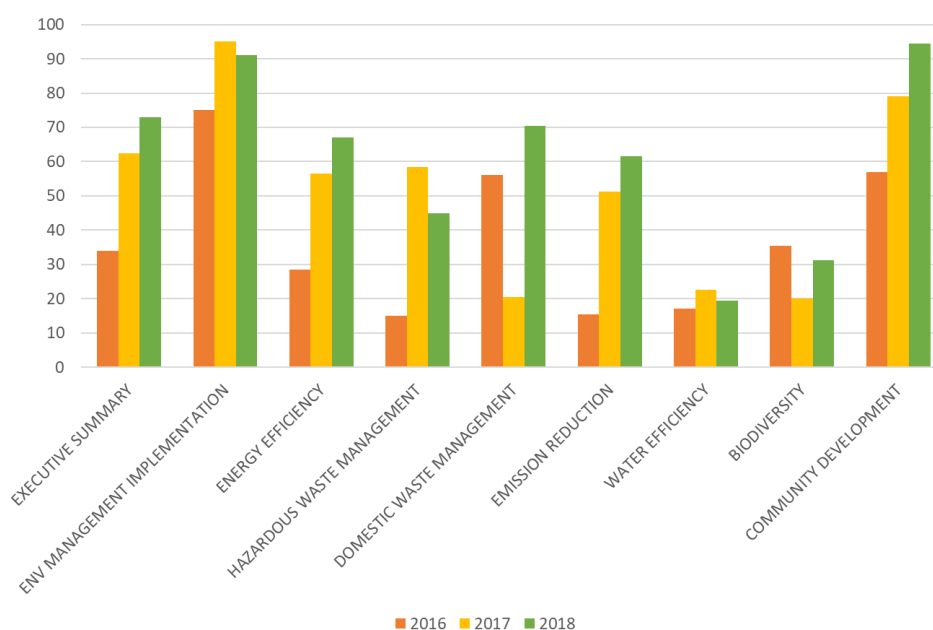


Figure 2: Scores of Each Aspects for PROPER GREEN Assessment.

3.1 Environmental Management Implementation

PGE Ulubelu has implemented environmental management system and has been certified with ISO 14001:2015 (Certificate Number: EMS693028) in 2018 by independent and credible certification. The certificate is valid from May 30, 2018 to May 29, 2021 with scope of activity for exploitation and geothermal plant operation for steam and electricity supply. This scope includes energy efficiency, hazardous waste management, domestic waste management, emission reduction, water efficiency and wastewater load reduction, biodiversity, and community development.

3.2 Energy Efficiency

As of 2018, PGE Ulubelu has saved a total amount of 485.26 GigaJoule through several energy efficiency program (accumulation from 2016). Many of its energy efficiency program focused on maximize utilization of geothermal steam supply and preventive maintenance scheduling to support main operation. Some programs give positive contribution to local community, such as hydraulic pump usage to provide clean water supply for Pagar Alam village, solar cell installation, and indirect heat exchanger for coffee dryer using cold brine flow along reinjection pipeline (closed system). These community development related programs account to almost 20% of energy saved using renewable and environmentally friendly energy (geothermal and solar). Because of the energy efficiency program, the company has saved money worth of approximately 500 million rupiah in two years.

3.2 Hazardous Waste Management

The hazardous waste management aspect is rather a sensitive matter to manage as it is highly regulated by law in Indonesia. PGE Ulubelu is only legible to temporarily store its produced hazardous waste in designated hazardous waste storage facility for certain amount of period and is not allowed to reuse or recycle its produced hazardous waste. In other word, to increase the absolute value (a value resulted from efficiency program from environmental aspect) for hazardous waste management, PGE Ulubelu can only do reduction program. Reduction program in hazardous waste management focus in technology development in operational system and transformation in procurement behavior of chemical and hazardous material. The calculation for absolute value in hazardous waste management is to calculate the potential amount of hazardous waste not produced because of the programs. The result is quite impressive as with 5 existing programs, the company has prevented a total potential amount of 1.18 ton of hazardous waste in two years. The company has also potentially saved around 560 million rupiah.

3.3 Domestic Waste Management

Unlike hazardous waste management, Indonesia government gives more flexibility for institution and individual to developing programs to reduce, reuse, and recycle domestic waste. Mainly, domestic waste from PGE Ulubelu is produced from regular activities in office. Therefore, the program's main focus is to maximize waste minimization and minimize waste recycle and reuse. PGE Ulubelu focus on digitalization to reduce unused paper, provide refill bottle water and water station to reduce plastic water bottle, and other waste preventive program. Additionally, for all the domestic waste produced, PGE Ulubelu guides local community for recycling program. There are two big recycling programs: Composting and Green School. With composting, the organic waste from office is sent to composting facility to create fertilizer which later send to local farmers for their usages. Green school focus on utilization of paper waste or other office waste (except hazardous waste like battery) to create school utilities such as world map, simple science figures, and other creativities for students. The target of green school is elementary student and teacher to grow their sense of waste recycle. The calculation for absolute value from domestic waste management is the combination of total potential waste from reduction program and total actual waste used in recycling program. A total of 1.2 ton of waste and 53.26 million rupiah has been recorded saved by the company in the past two years.

3.4 Emission Reduction

As of 2018, PGE Ulubelu has saved a total amount of 1.33 million ton of CO₂ through several emission reduction program (accumulation from 2016). Many of its emission reduction program focused on maximize utilization of geothermal steam supply and preventive maintenance scheduling to support main operation and align with energy efficiency program. The significant number of CO₂ reduction comes from the utilization of geothermal power plant to support household produced by the company itself. Because of the emission reduction program, the company has saved operational cost worth of approximately 500 million rupiah in two years.

3.5 Water Efficiency and Wastewater Load Reduction

PGE Ulubelu applies closed system procedure in maintaining the wastewater produced (brine and condensate) from geothermal steam and electricity supply. Thus, there has not been any wastewater load reduction program to support data for PROPER. Nevertheless, PGE Ulubelu has several programs related to water efficiency mainly come from reducing make up water usage in geothermal plant by developing technology. The programs have absolute value over 35.000 m³ of water and contribute to over 200 million worth of money saved.

3.6 Biodiversity

Saburai goat is a local breed endemic to Ulubelu, Tanggamus. Listed by Minister of Farming Indonesia as an endemic species, Saburai goat is a mix breed of male boer species and female etawa species. In order to raise awareness of local farmers and to increase the population of Saburai goat, PGE Ulubelu introduced the breeds since 2014. Not until 2016 when the company started to engage local farmer community to develop breeding technology for Saburai goat's growth in Ulubelu. Another biodiversity program induced in neighborhood is reforestation using local and endemic plants to support the existing ecosystem.

3.7 Community Development

Through several of its programs, PGE Ulubelu contributes to community development in Ulubelu area where it resides. PGE Ulubelu helps the local community by providing access to education and helping local farmers to boost their harvest while maintaining sustainable farming practice. Some programs from energy efficiency give positive contribution to local community, such as hydraulic

pump usage to provide clean water supply for Pagar Alam village, solar cell installation, and indirect heat exchanger for coffee dryer using cold brine flow along reinjection pipeline (closed system). With composting, the organic waste from office is sent to composting facility to create fertilizer which later send to local farmers for their usages. Green school focus on utilization of paper waste or other office waste (except hazardous waste like battery) to create school utilities such as world map, simple science figures, and other creativities for students. The target of green school is elementary student and teacher to grow their sense of waste recycle.

4. DEVELOPMENT FOR FURTHER IMPROVEMENT

The strategy developed has some rooms for further improvement, especially to link the program with Sustainable Development Goals (SDGs). MoEF tried to gather data from PROPER in 2018 to support national data collection for SDGs. However, since a standard data collection methodology had not been established, the data could not be called valid. PROPER, although targeting some aspects in SDGs, is not yet able to answer sustainability for improvement in environmental sectors. Many programs are created solely to boost the number of absolute values (such as amount of energy saved or waste reduced) for each aspect.

While waiting for the system to be ready, the company must now start to consider to align the program with SDGs indicative goals and targets. In addition, a Life Cycle Assessment (LCA) must also be done to ensure the sustainability and effectiveness of every program. This is also possible to save more money by ignoring programs that are not related to operational excellence. In 2019, PGE Ulubelu has started to create database for LCA. This stage is expected to be finish in 2019 and data will be used for following year. The strategy plan will be different once the database has been finished as it will involve result from LCA calculation to ensure the sustainability of the programs.

5. CONCLUSION

In conclusion, PGE Ulubelu has created implementation strategy to excel the company's performance in environmental management towards sustainable business practice. The strategy has proven through PROPER certification by MoEF to be effective as the company has now been two times recipient of GREEN PROPER and is expected to continue the trend. The score has improved considerably from 333.5 in 2016 when the strategy had not been established to 553.25 in 2018 when the strategy has been introduced and implemented. Most environmental aspects in PROPER (environmental management implementation, energy efficiency, hazardous waste management, domestic waste management, emission reduction, water efficiency and wastewater load reduction, biodiversity, and community development) show significant improvement with potential development in the future. Many programs have aligned with local communities' needs to prepare for sustainable development. PGE Ulubelu must prepare the upcoming challenges to synergize all existing programs with SDGs indicative goals and to conduct further LCA study.

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