



**starenergy**

Star Energy Geothermal  
(Wayang Windu) Limited

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(Wayang Windu) Ltd.**

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**2016**  
Sustainability  
Report

2016 SUSTAINABILITY REPORT

CONSISTENCY FOR SUSTAINABLE OPERATION

**2016**  
Sustainability  
Report

# CONSISTENCY FOR SUSTAINABLE OPERATION



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Star Energy Geothermal  
(Wayang Windu) Limited



**PERTAMINA**

PERTAMINA  
GEOTHERMAL ENERGY

# CONSISTENCY FOR SUSTAINABLE OPERATION

Through this theme, we would like to deliver a clear message to readers about our strong commitment in running the programs in environmental sector as well as social and economic development of the community in our operational area.

The Company's success in regaining the PROPER Gold in 2016 for its performance in environmental programs and the improvement of the human development index of Pangalengan District as well as the success of our Community Development programs demonstrate our consistency and active participation in maintaining the sustainability of nature for the generations to come.

WELCOME NOTE  
FROM THE  
PRESIDENT & CEO

OUR PROFILE

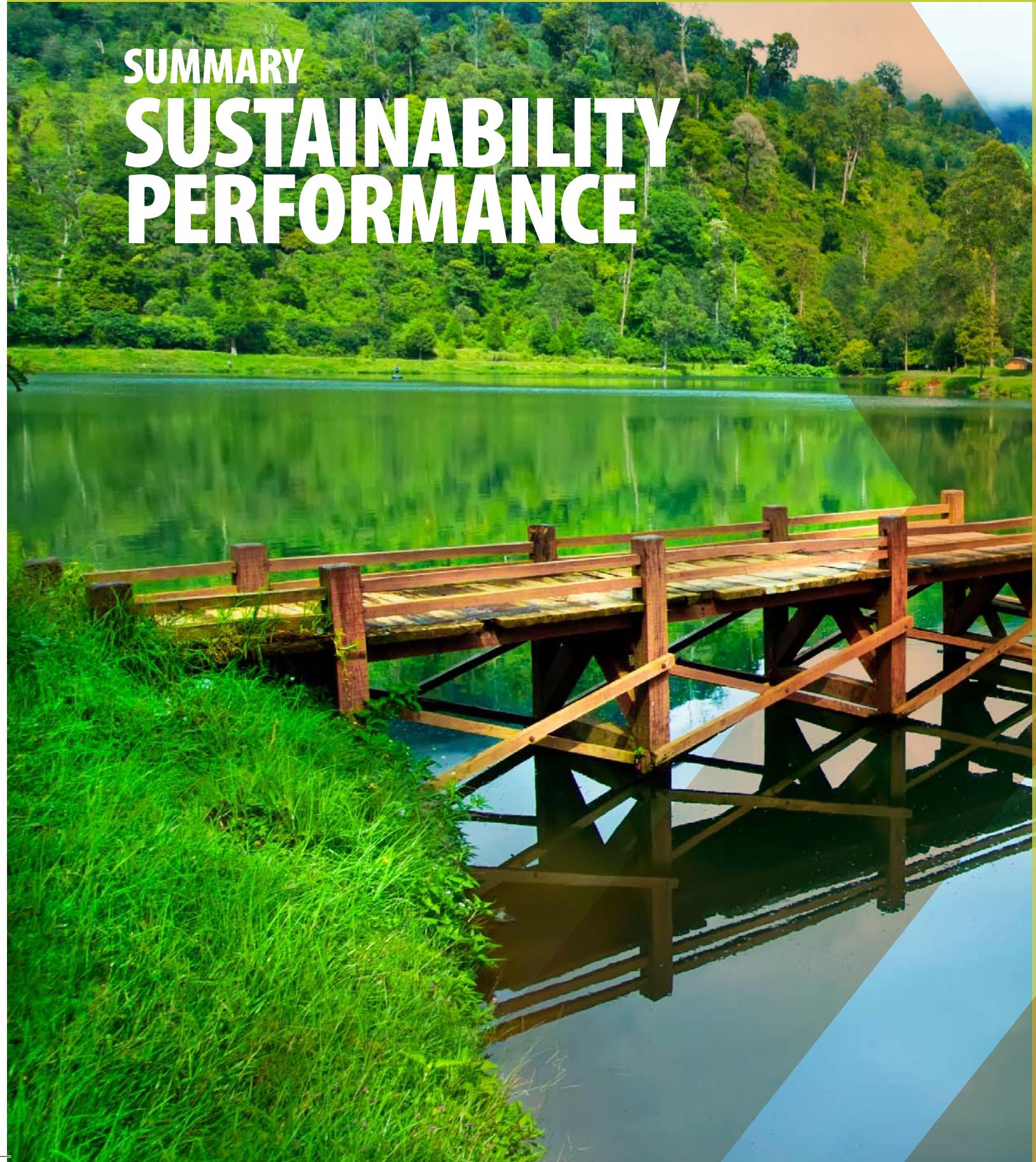
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THIS REPORT

COMMITMENT TO  
PRESERVING AND  
IMPROVING THE  
QUALITY OF THE  
ENVIRONMENT

BUILDING THE  
WAYANG WINDU  
COMMUNITIES

SUMMARY OF KEY ACHIEVEMENTS

# SUMMARY SUSTAINABILITY PERFORMANCE



OCCUPATIONAL  
SAFETY  
AND  
HEALTHDEVELOPING  
GLOBAL-INSIGHTED  
WAYANG WINDU  
PERSONNELSSUPPORTING  
ECONOMIC  
DEVELOPMENTQUALITY  
DEVELOPMENT FOR  
SUSTAINABILITY  
GOVERNANCEGRI STANDARDS  
INDEXCONGENIALITY  
WITH SUSTAINABLE  
DEVELOPMENT GOALS

# ENVIRONMENT PERFORMANCE

- Regaining the PROPER Gold in 2016, after first achievement in 2007, followed in 2012 and 2014
- The first PLTP in Indonesia to implement the Integrated Control System with zero venting concept so that no steam is released to the environment
- The first PLTP in Indonesia to install a real-time monitoring of exhaust emissions to measure emissions debit released to the atmosphere through cooling towers
- Actively taking part in reducing global carbon emissions by implementing Clean Development Mechanism (CDM) program
- Carrying out design engineering and energy optimization as conservation and energy efficiency efforts
- Implementation of rainwater and condensate water utilization (from the operation of AC and Cooling Towers) in PLTP as part of the water conservation program
- Implementation of non-B3 waste reduction program through composting organic waste
- Implementation of oil analysis program to reduce oil waste (LB3) PLT
- Implementation of revegetation program in recharge areas and ex-erosion areas as part of participation in biodiversity conservation efforts, improvement of environmental condition, and efforts to maintain the sustainability of steam resource from within the earth
- Involving the community in environmental improvement programs, emphasizing balance on social community improvement, welfare improvement, and improvement of environmental condition and preservation.

# COMMUNITY DEVELOPMENT SECTOR

- Increasing the value of Human Development Index of Pangalengan District and the surrounding areas
- Strengthening the realization of SEGWWL's "Sinergisitas CSR" program
- Improving citizens' competence to improve their welfare
- Improving the activities in Koperasi Simpan Usaha Nurkayana
- Providing assistance through sewing training, which is part of the 'Rumah Pintar' program and providing scholarships for elementary school up to university students
- Building infrastructure in villages around operational areas
- Strengthening the institution of Margamulya Coffee Farmers Group
- Providing assistance in the form of facilities and infrastructure development of TBM Kertamanah as the location of "Green Economy Saba Desa" literacy and independence program



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# HUMAN RESOURCES SECTOR

- Conducting TRAINING PROGRAMS to improve employee skills and expertise
- Increasing the Proportion of Local Workers
- Realizing all of the Human Resource Development Programs
- Striving to fulfill the expectation of the employees as one of the Company's key stakeholders



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#### SUMMARY OF KEY ACHIEVEMENTS

## WORK SAFETY SECTOR

- Improving the work safety culture, demonstrated by the increased number of working hours without work time loss
- Conducting work safety campaigns and seminars
- Implementing all health-related counselling and prevention activities to employees



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# QUALITY IMPROVEMENT OF THE COMPANY'S MANAGEMENT SYSTEM

- Socialization and Implementation of Code of Conduct
- The first PLTP to implement the “Integration Management System” including ISO 14001:2015, ISO 9001:2008, OH SAS 18001:2007, ISO 50001:2011, ISO 55001:2014, ISO/IEC 17025:2008 and SMK3 through the Integrated Management System (IMS) applied to the eWayang Windu Integrated Management System (WIMS)



# AWARDS AND CERTIFICATIONS

## AWARDS

Various awards in environmental management and community empowerment, nationally and internationally, include:

- a. PROPER Gold Award in 2007, 2012, 2014, and 2016 from the Ministry of Environment and Forestry
- b. PROPER Green Award in 2008 until 2011, 2013, and 2015 from the Ministry of Environment and Forestry
- c. ISO 14001:2015 Environmental Management System (EMS) Certification in 2016 from Lloyds Register Quality Assurance (LRQA)
- d. Aditama Award for the Environment and Occupational Health and Safety in 2011 and 2013 from the Directorate General of Renewable Energy and Energy Conservation (REEC)—EMR
- e. Natural Resources Category Award in Sustainability Reporting Award in 2014
- f. Gelar Karya Pemberdayaan Masyarakat (GKPM) Platinum Award from the Coordinating Minister for People's Welfare of the Republic of Indonesia in 2014
- g. Award from ASEAN Learning Network for CSR in Enhancement & Empowerment of Micro Economic Community Sector in 2013
- h. West Java CSR Award in the sector of Education, Economic Development, New Classroom Infrastructure, and Health from the Governor of West Java in 2013
- i. The finalist of the 4th Global CSR Global Award in 2012 in the Philippines
- j. Implementation of Integrated Management System (IMS) and Certification of Environmental Management System, Quality, and OSH ISO 14001:2004, OH SAS 18001:2007 and ISO 9001:2008 in 2006, 2007, and 2014 from Lloyds Register Quality Assurance (LRQA), ISO 50001:2011, ISO 55001:2014 and ISO/IEC 17025:2008
- k. Raksa Prasadha Award for Environmentally-Aware Industry from BPLHD in 2012
- l. Energy Award from the Ministry of Energy and Mineral Resources of Republic of Indonesia in 2012
- m. "Best" Award in Environmental Management and Compliance from the Regent of Bandung in 2012
- n. Zero Accident Award from the Ministry of Manpower of the Republic of Indonesia in 2016
- o. Platinum Award for the Prevention and Treatment of HIV & AIDS at Work from the Ministry of Employment of the Republic of Indonesia in 2016
- p. Aditama Award from the Ministry of Energy and Mineral Resources (highest ranking in the Environment and Occupational Safety area) in 2016

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**ISO 14001:2015**  
*Lloyds Register Quality Assurance  
(LRQA)*  
 2016-2018



**ISO 9001: 2008**  
*Lloyds Register Quality Assurance  
(LRQA)*  
 2014-2017



**OHSAS 18001 : 2017**  
*Lloyds Register Quality Assurance  
(LRQA)*  
 2017-2020



**Sertifikat SMK3**  
*Minister of Manpower of the Republic  
of Indonesia*  
 2016 - 2019

# IMPORTANT EVENTS SUSTAINABILITY



Implemented the SHEMS drilling campaign programs

Signed the commitment with Star Energy Geothermal WW Employees and Contractor "I choose safe, secure, healthy at all times to celebrate OHS Month"



2016 OHS National Day Workshop, with the theme: Optimizing OHS Culture in Industry: what will make you safer is not mere hope but to act safely.



Held a Stakeholders Gathering with 13 village heads and local government agencies, and conducted an external audit on the certification of the Safety & Health Management System (SMK3).



Drilling of Make Up Well at WW-Q7  
Evaluation and Lesson Learned for PROPER 2015 by West Java BPLHD on 19 April

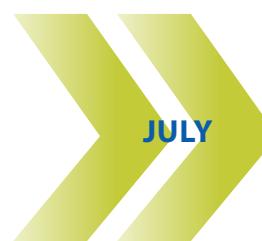


Received 3 awards from the Minister of Manpower of the Republic of Indonesia: Zero Accident Award, Safety Management System Award—Gold Flag & Platinum Award for AIDS Program on 18 May 2016



Celebrated Earth Day by conducting reforestation activity with stakeholders of Star Energy Geothermal WW, such as BPLHD, BPLH, MUSPIKA, ADM PTPN, ASPER PERHUTANI, etc.

Moving rig from WW-Q to MB-C to continue the drilling make up well activity

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Visitation from the Minister of State-Owned Enterprises  
Implementation of Internal Audit Program for OHSAS and QMS



Drilling activities at MBC-1 and mitigation measures due to landslides near the MBD bridge



Technical Guidance Training by EBTKE on 27-28 September 2016



Rig transfer from MBC to WWA and kick-off of drilling activity at WWA-7 on 28 October 2016



Visitation of the PROPER Board to Wayang Windu Geothermal Field



Upgrading Environmental Management System, from ISO-14001:2004 to ISO 14001:2015

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# WELCOME NOTE FROM THE PRESIDENT AND CEO

[GRI 102-14]

**Rudy Suparman,**

President and CEO



We place a strong commitment to the sustainability of the earth and its contents by accomplishing various programs that addressed the stakeholders' expectations by optimizing the management of available resources across economic, social and environmental aspects. We believed that all of these programs are aligned with the sustainable development objectives within the Sustainable Development Goals (SDGs).

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### Dear Stakeholders,

In this welcome note, let us give our thanks to God Almighty and extend our best wishes to all, because of His grace our Company has achieved a record performance in 2016, which was encouraging. Wayang Windu has been operating as usual again to support the clean electricity needs for Indonesia's economic development. Moreover, we successfully completed the reinstatement and preservation of areas that were affected by a landslide in mid-2015, by applying various innovations that enabled us to better mitigate the risk of such disasters across the region in our future operations.

The reinstatement and preservation program which we did involved the active participation of surrounding communities, so they also felt the economic and social benefits from the improved quality of their environment and homes.

### **CONSISTENT IN COMPLETING THE REINSTATEMENT AND PRESERVATION PROGRAM, FOR ENVIRONMENTAL CARRYING CAPACITY AND WELFARE OF THE SOCIETY**

In 2016, we demonstrated our consistency in completing the Reinstatement and Preservation program, with a greater focus on improving environmental carrying capacity, improving risk mitigation competencies, and ensuring that similar incidents can be prevented in the future, while also supporting the improvement of the society's welfare.

Following the operation of the entire facility normally, we re-concentrated our efforts on maintaining geothermal power generation in our managed location through a make up well drilling program. In addition, we continued to educate the community about the importance of maintaining and improving the quality of the surrounding environment.

At the same time, we are continuing the rehabilitation program for the landslide-affected communities, building a new settlement far from the affected area to ensure the safety of the houses and to intensify the community development program, so as to jointly improve the quality of the protected forests, support the reforestation efforts on critical lands, and increase the economic value of our environmental-based programs.

### **CONSISTENT IN IMPROVING ENVIRONMENTAL QUALITY**

We demonstrated a strong consistency in maintaining and improving the quality of the surrounding environment through the realization of two major programs, namely improving the quality of environmentally friendly operations and implementing environmental conservation programs.

We are improving the quality of our environmentally-friendly operations through various innovation programs to improve energy efficiency, reduce greenhouse gas emissions (GHG), manage waste based on 3R (reduce, reuse, recycle) principle, and conduct water conservation programs. We intensified the implementation of integrated monitoring system through WIMS (Wayang Windu Integrated Management System) manual, monitored Non Combustible Gas (NCG) emissions, monitored the implementation of Clean Development Program (CDM) scheme carefully so that the CDM program successfully accumulated the total CO<sub>2</sub> reduction, Certified Emission Reduction (CER) by 781,487.33 CERs (in 2016). In addition, these programs have enabled the Company to improve its energy intensity, and Wayang Windu thus became the 4th best in the world in this field, based on benchmarking study conducted by PT ITS Kemitraan.

In order to restore the environmental conditions, we intensify revegetation and land rehabilitation activities by cooperating with renowned institutions of higher education in agriculture, Bogor Agricultural University (IPB) and Perhutani. Our partnership is focused on restoring the environmental conditions of flora in landslide-affected areas, with the aim of restoring land functions and stabilizing the soil. The revegetation we performed with a sound planning and with great discipline. We also conduct a monitoring program for endemic flora and fauna species in the entire managed area to ensure the improvement of environmental quality.

All programs in the environmental aspect helped us regain the PROPER GOLD award from the Ministry of Environment in 2016.

### **CONSISTENT IN SUPPORTING THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT**

Taking our lesson from the conditions we have encountered, we ensure that the entire range of Star Energy Geothermal (Wayang Windu) Ltd's management is fully involved in efforts to achieve sustainable development goals, as defined in the Sustainable Development Goals (SDGs), implemented from 2016 until 2030. As a company that manages renewable energy sources, namely geothermal power, we are determined to contribute towards the achievement of the 17 sustainable development goals on the global scale, together with other world citizens.

We believe that a firm relationship between the Company and its stakeholders that have already been established make the achievement of this common goal something that can be achieved. Thus, at the end the Company with the support of its stakeholders becomes competent to demonstrate its consistency in balancing economic performance with social and environmental performance as part of achieving the SDGs.

### **CONSISTENT IN IMPROVING THE SOCIAL LIFE OF SURROUNDING COMMUNITIES**

We continually strive to improve the quality of people's lives through the implementation of various corporate social responsibility programs, which consist of two main programs, namely Community Development Program and Public Relations, which involving the participation of the surrounding community as the subject of the program. We have conducted various activities, including: developing educational facilities and providing scholarships, basic infrastructure improvements, construction of village/sub-district government facilities, "Rumah Pintar" facilities and construction the places of worship, as well as promoting community health improvement program.

The ultimate goal from the implementation of this program is to increase the Human Development Index (HDI) in the managed areas. The increase in HDI indicates an increase in people's welfare. In addition to these routine programs, we are continuing the post-disaster recovery program by supporting the relocation of landslide-affected people to safer areas, conducting a basic level sewing training, and supporting the activity of vegetable farming and worm cultivation to improve their standard of living.

### **CONSISTENT IN SUPPORTING NATIONAL ECONOMIC DEVELOPMENT**

We showed consistency in supporting the efforts to boost economic growth throughout 2016, through the Company's diverse economic programs. We increased the distributed economic value by increasing our tax payments, payments of various contributions and retribution fees, involvement of local partners in the procurement program of goods and services, as well as the absorption of local workforce.

We provide entrepreneurship training for the employees who will enter retirement, and also provide financial support to our pension program, by paying most of the pension contributions for permanent employees in the Company's pension program.

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We also demonstrated consistency in Community Empowerment and Improvement Program implementation through provision of financial support as well as training of basic entrepreneurship for individuals and cooperatives around the managed areas, and allowed people to optimize resources in the surrounding areas, creating products of substantial economic value. Thus, this step is expected to reduce their dependence on protected forest areas as a land with which they obtain basic and additional incomes.

### **LOOKING AHEAD**

We are determined to optimize the utilization of renewable energy sources in the area under Wayang Windu management for the coming years, in line with the blueprint for renewable energy development from PT PLN as the electricity industry manager in Indonesia. The potential of geothermal energy resources in Indonesia is equivalent to 29,612 MW (201) or else 53% of the total installed generating capacity by the end of 2016. So far only about 1,708 MW or 5.8% of that potential has been utilized through Geothermal Power Plants (PLTP).

Facing 2017 with forecasts of national economic conditions that continued to grow conservatively, we are committed to showing greater consistency in improving sustainability performance and fulfilling the expectations of our stakeholders.

### **CLOSING**

Finally, I thank all stakeholders and shareholders who have worked together with Wayang Windu to support our various accomplishments of sustainability in 2016.

We also extend our appreciation to all our employees, for dedication and hard work in supporting the efforts to improve the entire infrastructure of the Company, and to restore the operational condition as it was before, in accordance with the determined schedule and then again work together to realize the achievement of our sustainable development objectives.

Furthermore, we encourage all employees to work harder in order to take the advantage of business growth opportunities in 2017 and subsequent years, while upholding the stakeholders rights as a basis for achieving sustainable business growth.

Jakarta, October 2016

**Rudy Suparman**  
President and CEO

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# OUR PROFILE



OCCUPATIONAL SAFETY AND HEALTH	DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS	SUPPORTING ECONOMIC DEVELOPMENT	QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE	GRI STANDARDS INDEX	CONGENIALITY WITH SUSTAINABLE DEVELOPMENT GOALS
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We operate a geothermal field in Wayang Windu area with a total installed capacity of 227 MW. In line with the Government program and the Company's mission, we are currently optimizing the geothermal capacity in this area, and looking for opportunities in other fields, in order to achieve the Company's mission to become a 1,200-MW geothermal power plant operator by 2028.

#### **Company Name**

Star Energy Geothermal (Wayang Windu) Ltd [\[GRI 102-1\]](#)

#### **Product & Service**

Power from Geothermal Resources [\[GRI 102-2\]](#)

#### **Marketing**

PT PLN (Persero) for Java-Bali-Madura network [\[GRI 102-6\]](#)

#### **Head Office Address**

Wisma Barito Pacific, Star Energy Tower A, 3, 8-11 floor [\[GRI 102-3\]](#)  
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 Jakarta Barat 11410, Indonesia  
 Tel : +62 21 532-5828  
 Fax : +62 21 5307 928  
[www.starenergy.co.id](http://www.starenergy.co.id)

#### **Operational Area**

Margamukti Village, Pangalengan, West Java [\[GRI 102-4\]](#)

#### **Shareholding**

Star Energy Geothermal Pte Ltd  
 (previously Star Energy Holdings Pte Ltd) 100% [\[GRI 102-5\]](#)

#### **Legal Status/Basis**

National Capital Investment, Virgin Islands [\[GRI 102-5\]](#)

#### **Membership in Associations**

Asosiasi Panas Bumi Indonesia (API) [\[GRI 102-13\]](#)  
 Masyarakat Ketenagalistrikan Indonesia (MKI)  
 Masyarakat Energi Terbarukan Indonesia (METI)

Our status in the above associations is as member, not as board. The Company pays membership fees according to the organization's provisions and regulations. The Company supports the organizations' programs by providing sponsorships.

## **THE COMPANY'S VISION, MISSION, AND VALUES**

### **Vision**

To provide electricity from environmentally friendly sources

### **Mission**

To become a 1,200-MW geothermal power plant operator by 2028

## THE COMPANY'S VALUES [GRI 102-16]

We have formulated and strived to instil strong cultural values in carrying out our business and maintaining sustainable relationship with stakeholders, through the definition of the Company's values, BRIGHT STAR, whose meaning is described below:

### Balance Value for Stakeholders

Strive for a balanced outcome for all stakeholders when we think, act and make decisions

### Respect People

- Value and respect each other
- Value for differences
- Find value in all ideas

### Innovative and Entrepreneurial

- Be creative
- Look for opportunities
- Make the best decision
- Have a sense of business
- Create value
- Challenge the status quo
- Willing to take risk
- Think critically

### Go the Extra Mile

- Strive for excellence
- Work smarter
- Beat your deadline
- Be proactive
- Seek out the best process

### Honesty and Integrity

- Act professionally & ethically
- Be honest and trustworthy
- Be committed
- Walk the talk
- Adhere to high business ethical standards

### Teach Yourself Daily

- Create learning opportunities
- Be an active learner
- Seek feedback
- Be Proactive

### Safety Health & Environment

- Comply with or exceed safety, health & environmental policy, laws and regulations
- Maintain a high level of SHE working competence and awareness.

### Team Work

- Value contribution of others
- Value the differences
- Think and act as a team
- Share information
- Communicate often

### Awareness of Costs

- Work effectively and efficiently
- Sense of urgency
- Sense of ownership
- Make continuous improvements

### Relationship Are Important

- Work in harmony
- Seek balance between results and relationships
- Build win-win partnership

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SAFETY  
AND  
HEALTH

DEVELOPING  
GLOBAL-INSIGHTED  
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### **Socialization and Efforts to Achieve the Company's Vision and Mission**

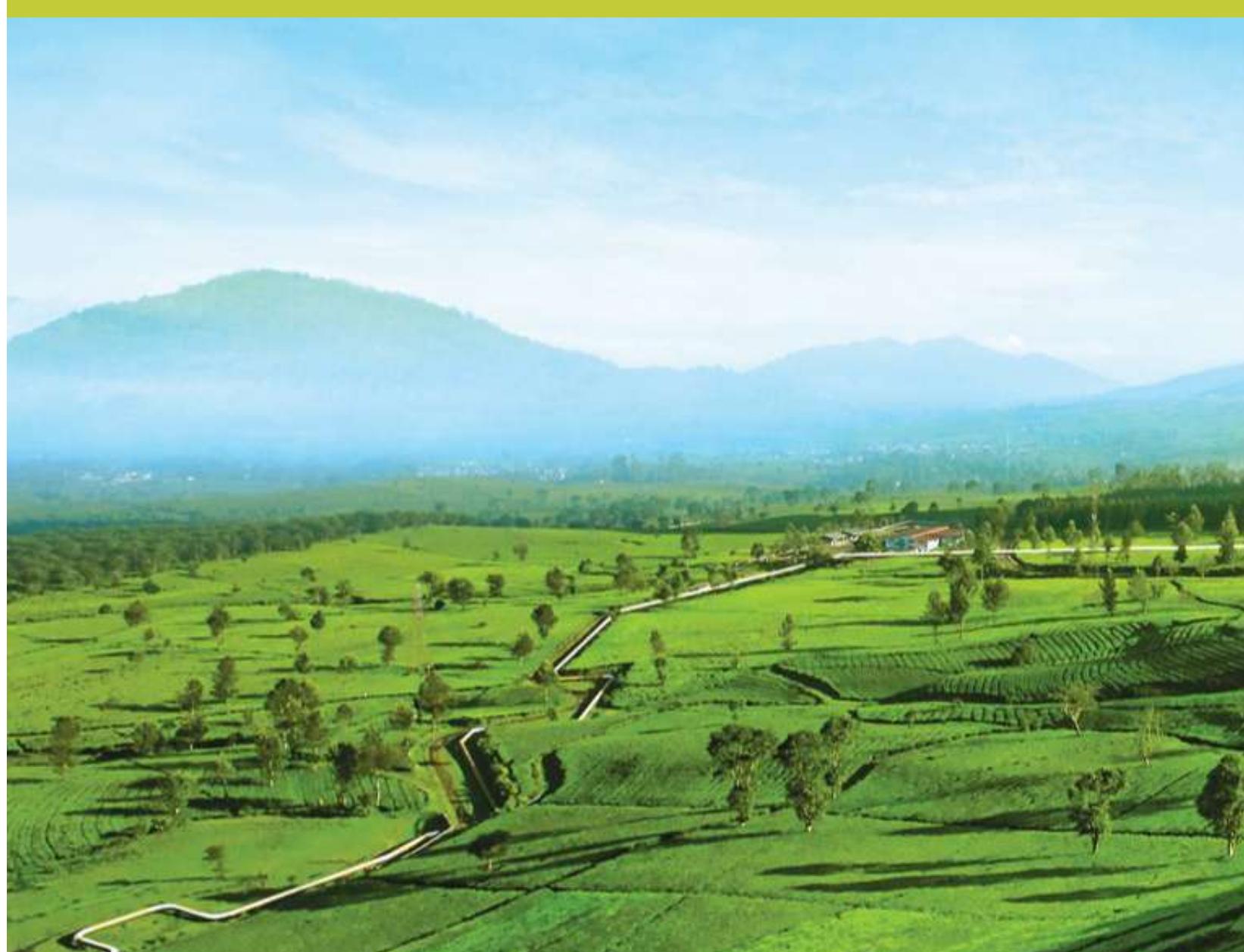
In order to ensure the achievement of our vision and mission, we internalize our vision and mission to all employees through various approach periodically, such as new employee orientation session that is part of the recruitment process, and employee performance evaluation. In addition, socialization is also conducted through promotion or rotation process activities. In-house training is also one of the effective methods with which we disseminate our vision, mission, and values.

### **Strategic Plan**

We have established various strategic initiatives outside our operational activities aimed at building a positive image and demonstrating the Company's concern on the issues present in its operational area. The realization of the plan is part of the effort to achieve the Company's vision and mission. Our various strategic initiatives include: operational efficiency improvement, participation in greenhouse gas (GHG) reduction, Human Resource (HR) competency development, environmental management, seeking new opportunities, or increasing existing plants and community development.

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## OUR PROFILE



### **Star Energy Geothermal (Wayang Windu) Ltd Overview**

Star Energy Geothermal (Wayang Windu) Ltd, or SEGWWL, is a National Private Company established in 1994. The Company is engaged in the exploration and exploitation of geothermal energy sources. The Company operates in the form of Joint Operation Contract with PT Pertamina

Geothermal Energy in its management area, Margamukti Village, Pangalengan District, Bandung Regency, West Java.

The Company runs its business under the laws and regulations of the British Virgin Islands and is registered as a permanent business establishment in Indonesia. Our product is 227 MW of electricity, from the Wayang Windu

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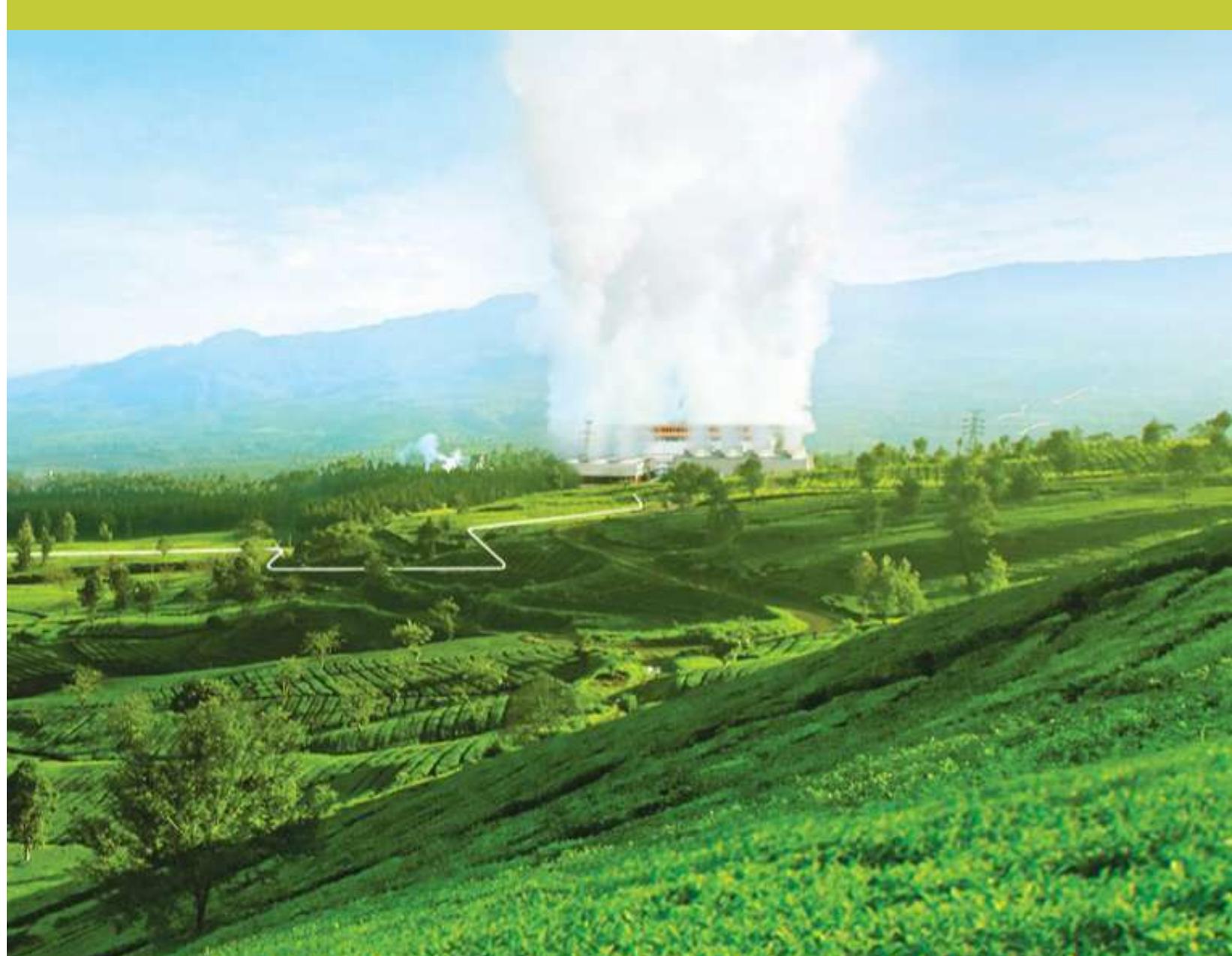
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geothermal power plant Units 1 and Unit 2. This power is then sold to PT PLN (Persero) to supply part of the power network's needs in Java-Bali-Madura. The total capacity represents 13.73% of Indonesia's geothermal power market share by the end of 2016, amounting to 1,653.5 MW. **[GRI 102-4, 102-6]**

Electricity production activities began in 2000 with the operation of Unit 1 generator, with a capacity of 110 MW. The capacity was then increased with the operation of Unit 2 generator, with a capacity of 117 MW. Both generators are supported by a number of steam production wells, which until 2016 reached 50 wells. We strive to develop the power generation capacity of Wayang Windu geothermal field by striving to obtain steam for Unit 3 development.

# SEGWL HISTORY

**1985**

Geological and  
Geophysical  
Surveys

**1991**

First Well spud, WW-A1  
drilling by Pertamina,  
discovered a commercial  
geothermal source

**1994**

The establishment of  
Mandala Nusantara Ltd  
as the first company to  
manage Wayang Windu  
Geothermal Field

**Dec 1994**

JOC and ESC  
signing

**1996**

Proven energy  
reserves for 220  
MW

**1997**

Proven energy  
reserves for  
440 MW

**Jun 1997**

EPC contract signing  
with Sumitomo  
Corporation

**Aug 1999**

Completion of Unit 1  
construction

**May 2000**

Commissioning of  
Unit 1

**Jun 2000**

Commercial Operation  
of Unit 1

**Jan 2001**

Operation Takeover  
by Management  
Unocal

**Nov 2004**

Star Energy Acquired  
100%

**2006**

Completion of  
ESC and JOC  
amendment

**2007**

EPC contract  
signing with  
Sumitomo  
Corporation for Unit  
2 Development

**Feb 2008**

The Company's name  
changed from MNL to  
Star Energy Geothermal  
(Wayang Windu) Ltd

**Dec 2008**

Commissioning of Unit 2

**Mar 2009**

Commercial Operation  
of Unit 2

**Dec 2012**

Settlement of Well  
Intervention Program

**Mar 2013**

Roll Out of Wayang Windu  
Integrated Management  
System (WIMS) with the  
support of Document  
Management System

**2014**

Intervention work of 9 wells,  
succeeded to increase steam  
production by 59 kg/s and  
one injection well managed  
to add injection capacity of  
more than 100 l/s

**2015**

Settlement of  
post-erosion  
reinstatement  
work

**2016**

**Implementation of drilling  
activities for "make up" well  
and upgrading of environmental  
management system from ISO  
14001: 2004 to ISO 14001: 2015.  
SMK3 Certification—Golden  
Flag**

## BUSINESS GROUP

Currently Wayang Windu does not have any subsidiary.

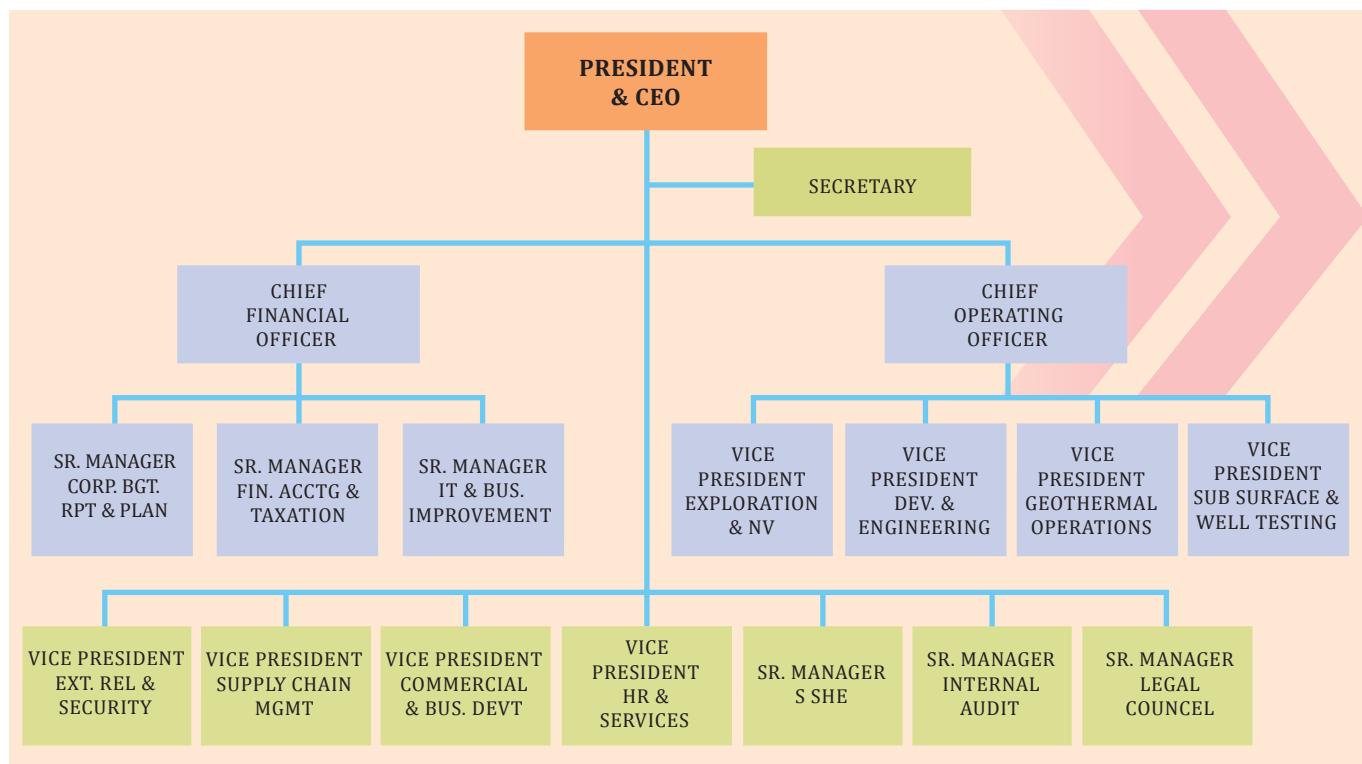
## THE COMPANY'S SCALE [GRI 102-7]

Our operational activities are supported by a total of 408 employees, including permanent and non-permanent ones. The total sales of our electricity in 2016 amounted to USD 165,070,000. Wayang Windu's business scale is as follows:

### Wayang Windu's Business Scale

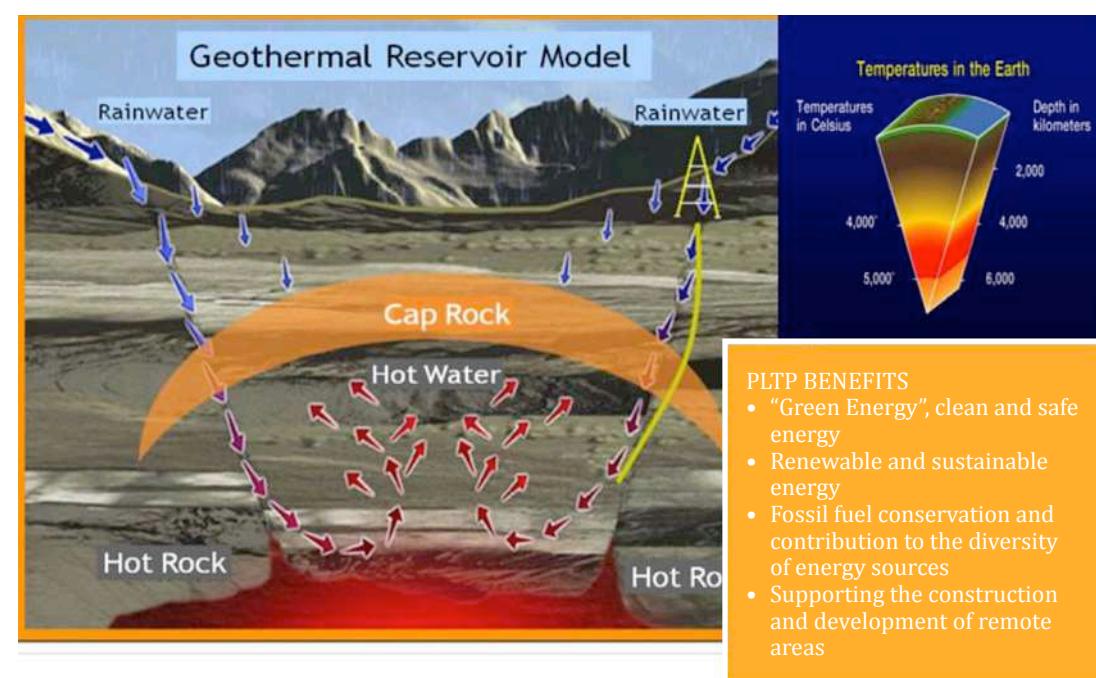
Description	Period			
	2013	2014	2015	2016
Total Employees	450	505	403	408
Total Net Sales (US\$ thousand)	121,776	117,158	68,887	165,07
Total Capitalization (US\$ thousand)				
- Payable	497,429	497,992	500,237	541,134
- Equity	32,522	50,834	44,887	94,35
Quantity of Products Sold (Gwh)	1,88	1,817	1,11	1,921
Total Assets (US\$ thousand)	530,051	548,826	554,124	635,484

## Organization Structure



## OPERATIONAL MAP OF THE COMPANY [GRI 102-6]

Our operational activities take place in the mountain area of Pangalengan Subdistrict, Bandung Regency, West Java, namely in Margamukti Village, which is also known as Wayang Windu geothermal block. The area is located approximately 40 km from Bandung to the south. Power generation activities are carried out through the generation of Unit 1 and Unit 2, with a total capacity of 227 MW, supported by 50 geothermal steam wells.



## WAYANG WINDU'S OPERATIONAL SUPPLY CHAIN [GRI 102-9]

Power generation's operational activities require a continuous supply of certain goods and services, since the power generated, in accordance with the power supply agreement with PLN, should not be interrupted. Such goods and services are basically divided into several major groups, including: goods and services for operational and maintenance activities, operational supporting goods and services, and stationeries.

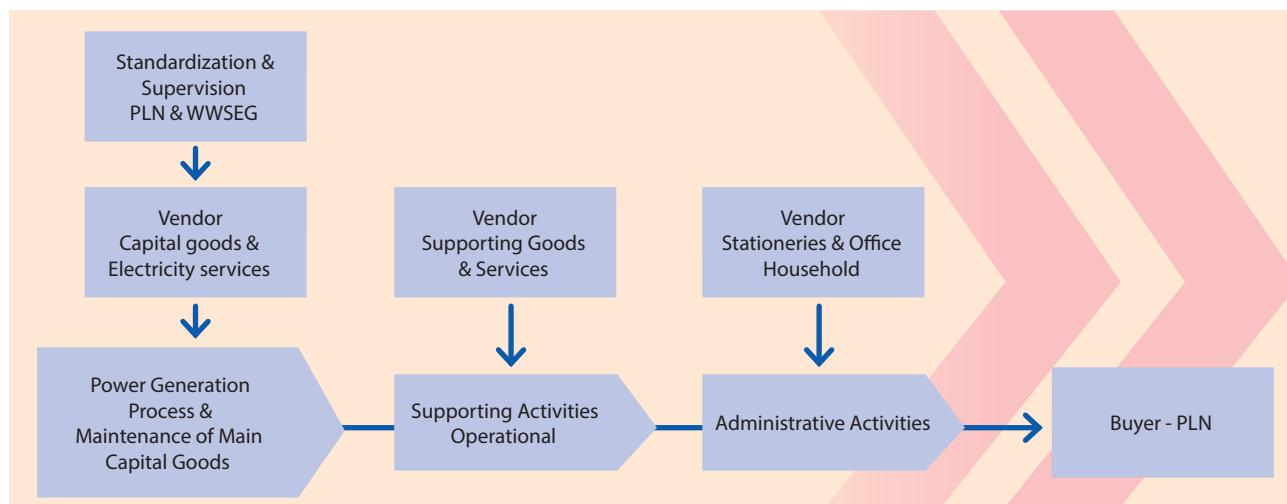
Operational and maintenance goods and services have strategic and vital value for business continuity. Therefore, the procurement of this type of goods and services will involve a series of monitoring and evaluation procedures, including the completion of specified quality of special goods and expertise in accordance with the applicable provisions. Vendors of this type of goods and services are usually limited, as it requires considerable sum of capital as well as involves large procurement values. The operational and maintenance supporting goods and services include

routine operational supporting materials, such as fuel, lubricants, chemicals, etc. The conditions for such goods and services vendors are in accordance with the provisions of general regulations. The last category is the fulfilment of daily needs, such as stationeries, etc. This is usually supplied by vendors from around the location of the activities.

In order to maintain the quality of supply, Wayang Windu conducts regular evaluation of the suppliers of goods and services. The provisions applied in the evaluation are implemented gradually, by taking into account the related grouping of the goods and services, which includes compliance with environmental, social (work hours, human rights), and economic (minimum wage) aspects. Based on the records, at end of November 2017, there were 2,573 goods and services vendors at Wayang Windu. However, only 648 vendors were still active within the period of January 2010 until November 2017.

A brief description of the supply chain of Wayang Windu's operational activities is presented in the following chart:

### Supply Chain Chart — Wayang Windu



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**Welcome to the 2016 Sustainability Report (“the Report”) of Star Energy Geothermal Wayang Windu Ltd (“Wayang Windu”). This is the eighth edition of our sustainability report since its first publication in 2009. Through this report we hope that all our stakeholders may evaluate and support SEGWWL’s support in ensuring the achievement of the sustainable development goals, i.e. development in terms of economic, social, and environmental aspects, in a balanced manner as well as in line with the points stated in the Sustainable Development Goals (SDGs), by optimizing the use of all available resources.**

## **REPORTING STANDARDS AND ASSURANCE**

**[GRI 102-54, 102-55, 102-56]**

This report has been prepared in accordance with GRI Standards: Core option. To facilitate readers in finding the GRI Standards that we have applied, we have formatted the GRI Standards disclosure numbers with a specific color on all pages where these disclosures can be found. The GRI Standard Core Content Index applied on this Report is presented on page 131.

In this Report there were no restatements of previous years' data, nor were there any significant changes to the reporting scope and boundary in the reporting period. Validation of all financial data took the form of audit conducted by a public accounting firm, while validation of other data was conducted by the internal team that prepared this Report  
**[GRI 102-10, 102-48, 102-49].**

No assurance process by an independent assurer has been performed on this 2016 Report. However, we have conducted the accordance check to ensure that the Report's preparation has been in accordance with the GRI Standards. The in accordance check statement can be found on page 130.

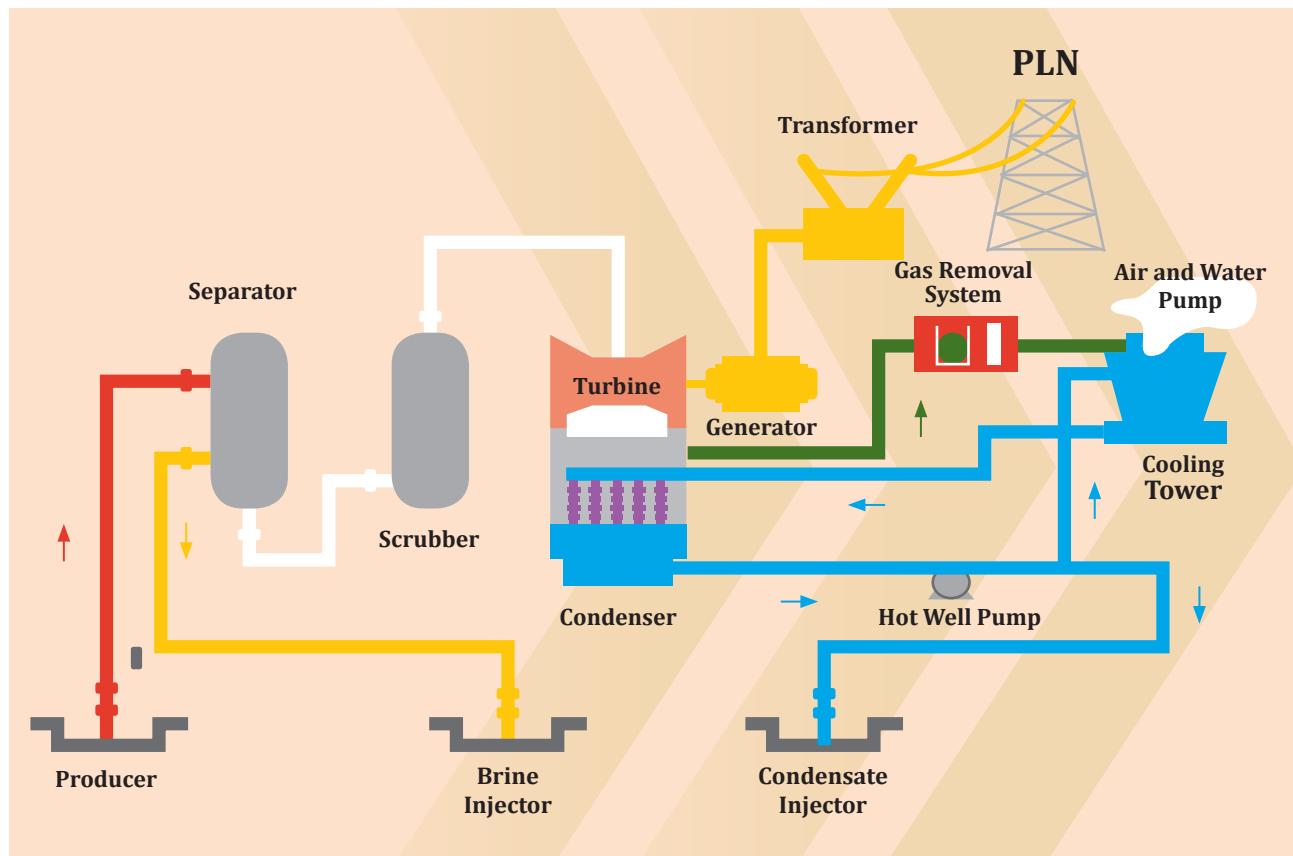
## **REPORTING PERIOD AND CYCLE**

This Sustainability Report is annually published and covers the period of 1 January to 31 December 2016. It contains sustainability-related information and data across three topics, namely economic, social, and environmental aspects. The previous year's report was published in October 2016.

**[GRI 102-50, 102-51, 102-52]**

## ELECTRICITY GENERATION PROCESSES

At the beginning, steam in liquid phase and dry vapor from the production well are directed to the separator to be separated in order to obtain pure steam, as to spin the turbine only saturated dry vapor is required. The resulting produced water is brine water, from the process of separation at the separator, and this water is returned to the injection well under the force of gravity via the injection pipe, or is then directed to the pond should there be issues with the injection well. Subsequently, the pure steam was used to spin the turbine of the generator.



After being used to spin the generator's turbine, the steam is condensed into the condensation column via direct contact. The water resulting from the condensation process is then pumped to the cooling tower. Subsequently, the condensation water from the cooling process is returned to the injection well via the injection pipe, under the force of gravity, creating a full closed cycle.

## SUPPLY CHAIN AND SUBSIDIARIES

[GRI 102-9, 102-45]

Star Energy Geothermal (Wayang Windu) Ltd does not have any subsidiaries, and therefore in this Report the scope is strictly Star Energy Geothermal (Wayang Windu) Ltd. Boundaries external to the Company, meanwhile, includes the main suppliers that provide goods and services for the Company and thus can be affected by the Company. These suppliers supply the main goods and services related to the development and operation of

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the power plant. They are required to fulfill the specific qualifications determined by Wayang Windu, based on the qualifications list of the main buyer of the Company's product, i.e. the State Power Company (PLN).

This is important as the reliability as well as the operational efficiency of the power plant highly depends on the quality of goods used and the periodical maintenance performed. Thus the Company has a strict selection process to filter its suppliers in these areas, so that it may obtain suppliers that are in line with the Company's long-term operational needs and also are in line with the Company's social and environmental policies.

Besides these special needs, we implement a compliance evaluation program on new and old suppliers alike, to ensure their compliance with the applicable labor laws. The various criteria used in our employment of people that we refer to include: minimum age to work, working hours and overtime, fulfillment of the right to take leave,

fulfillment of the minimum regional wage, etc. All or 100% of our new suppliers in this reporting period have undergone this selection process. [GRI 414-1]

## DETERMINING REPORT CONTENT

[GRI 102-46]

Essentially the determination of this Report's contents was based on the GRI Standards protocol, namely, arrived at by conducting four stages. **First**, identifying material aspects and their boundaries (Identification). **Second**, prioritizing the material aspects or issues as identified in the first stage (Prioritization). **Third**, validating the material aspects (Validation). **Fourth**, reviewing the Report upon its publication in order to improve the next year's Report (Review). The implementation of these processes was intended to apply the four principles as required by GRI-G4, namely stakeholder inclusiveness, materiality, sustainability context, and completeness. See Flowchart for Determining Report Content, as follows.



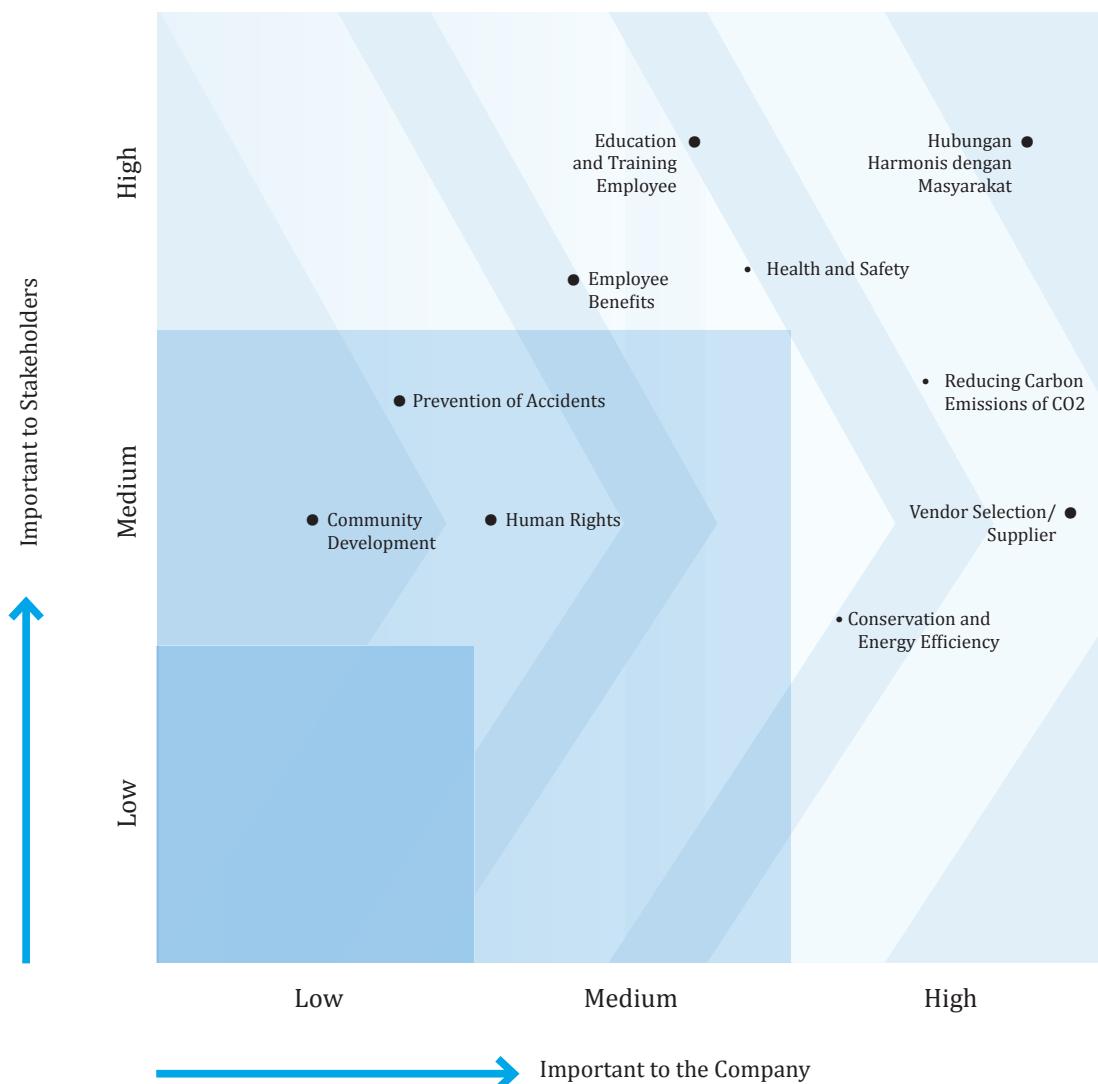
## DETERMINATION OF MATERIALITY

We implemented the principle of Materiality on this Report by choosing material aspects or contents as obtained from the focus group discussions with our stakeholders.

We request the input and opinion from our stakeholders to determine the materiality of the issues contained in this Report by sending out questionnaires, as a form of implementation of the principles of stakeholder inclusiveness. The stakeholders included: workers

unions, shareholders, communities, non-governmental organizations, suppliers, industrial associations, and the government. Through an internal focus group discussion we also presented a similar questionnaire to obtain a perspective from within the Company.

From these forums and the responses from the stakeholders, we obtained a picture of the materiality of the issues reported, as illustrated by the following materiality graph.



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## **MATERIAL ASPECTS AND THEIR BOUNDARIES [GRI 102-47, 103-1]**

Identification of material aspects as part of the content of this Report is determined by taking into account the impact of the Company's operations on the environment and the surrounding communities, in addition to the principles of accountability and transparency. These aspects have been determined via a process explained earlier. In the identification phase, we conducted focus group discussion by taking into account the materiality level of the issues to be presented in the Report. The material aspects and their boundaries are stated in the table below.

### **Material Aspects and Their Boundaries**

Material Topic	Why This Topic Is Material	Disclosure #	Boundary	
			Internal to Wayang Windu	External to Wayang Windu
<b>Economic</b>				
Economic Performance	Significant impact on stakeholders	201-2, 201-3	✓	
Market Presence	Significant impact on stakeholders	202-1	✓	
Indirect Economic Impact	Significant impact on stakeholders	203-1, 203-2	✓	
Anti-Corruption	Significant impact on development	205-1	✓	
<b>Environmental</b>				
Material	Significant impact on sustainability	301-1, 301-2	✓	
Energy	Significant impact on sustainability	302-3, 302-4	✓	
Water	Significant impact on sustainability	303-1, 303-3	✓	
Biodiversity	Significant impact on sustainability	304-3, 304-4	✓	
Emissions	Significant impact on sustainability	305-1, 305-2, 305-6	✓	
Effluents	Significant impact on sustainability	306-2	✓	
Environmental Compliance	Significant impact on sustainability	307-1	✓	
Suppliers Environmental Assessment	Significant impact on reputation of the organization	308-1		✓
<b>Social</b>				
Employment	Compliance with applicable regulations	401-1, 401-2	✓	
Occupational Health & Safety	Significant impact on employees	403-1, 403-2, 403-4	✓	
Training & Education	Significant impact on employees	404-3	✓	
Non-Discrimination	Significant impact on employees	406-1	✓	
Freedom of Association and Collective Bargaining	Significant impact on employees	407-1	✓	
Local Communities	Significant impact on stakeholders	413-1	✓	
Suppliers Social Assessment	Significant impact on reputation of the organization	414-1	✓	
Customer Health & Safety	Significant impact on customers	416-2	✓	
Marketing & Labeling	Significant impact on customers	417-2	✓	
Socioeconomic Compliance	Significant impact on economic growth	419-1		✓

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## **VALIDATION AND REVIEW**

We have conducted the validation and review processes to ensure that the report has a balanced content, i.e. aside from showcasing positive performance in certain aspects, this Report also includes negative performance in other aspects, in addition to taking into account the input, advice, and recommendations of all our stakeholders.

## **CONTACT PERSON [GRI 102-53]**

Should you require further information or have questions regarding this Report, please contact:

## **MANAGER HUMAN RESOURCES & DEVELOPMENT**

**Star Energy Geothermal (Wayang Windu) Ltd**

Wisma Barito Pacific, Star Energy Tower

Lantai 3, 8-11

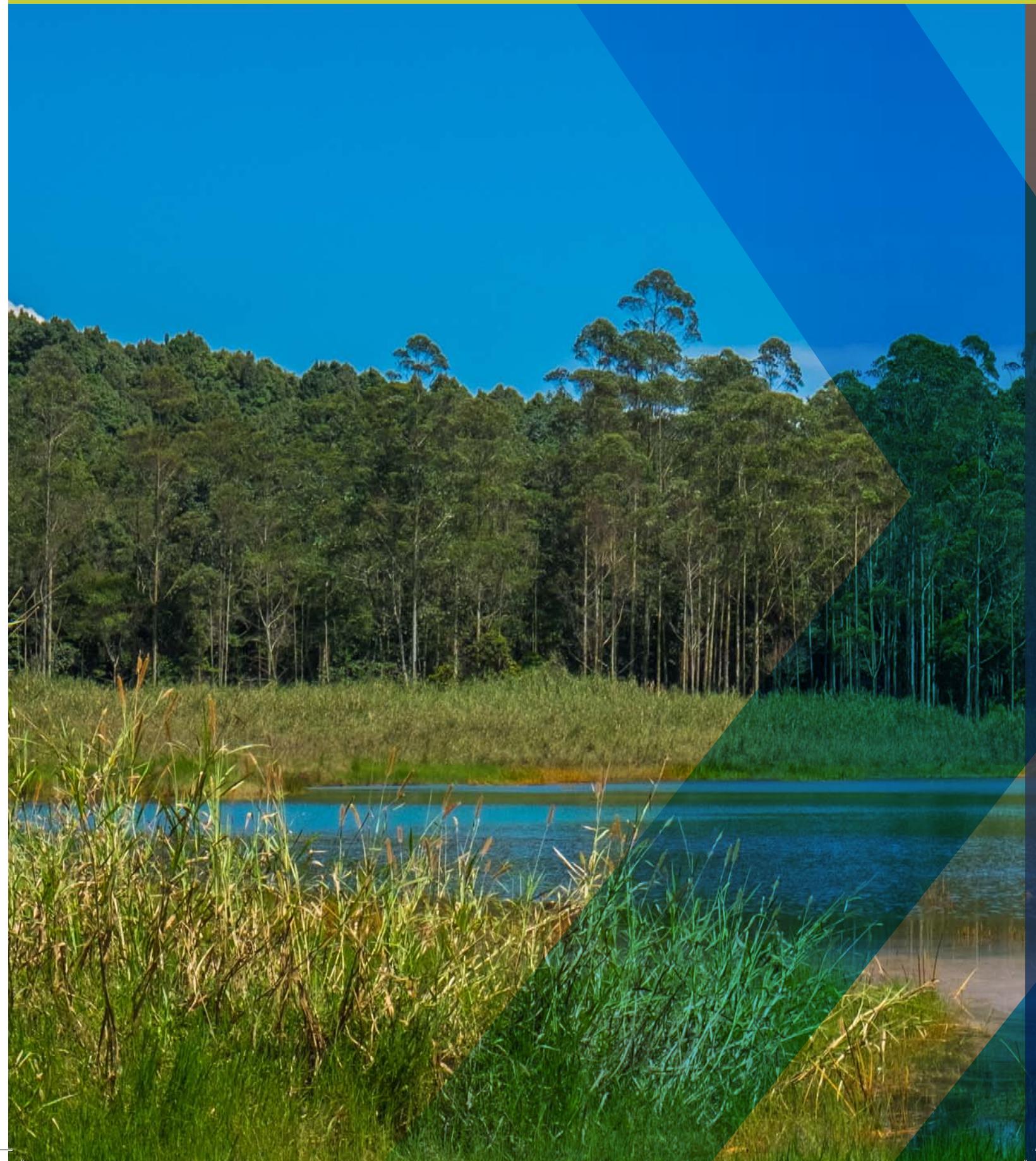
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# COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT

*“More than simply fulfilling our obligations, we are strongly committed to implementing various environmental quality preservation and improvement programs.”*

*“For our commitment to this, as well as the quality of the programs implemented and the corresponding results, Wayang Windu again obtained the PROPER Gold—the fourth since 2003, the first time we participated in the PROPER program.”*

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT****PURPOSES AND OBJECTIVES**

Governments in both developed and developing countries are currently working hand-in-hand on reducing the amount of CO2 emissions, one of the main causes of extreme weather and global climate change. Besides emission reduction from industrial and transportation activities, global community also seeks to conserve tropical forests to optimize CO2 absorption during plant photosynthesis. The effort was set down under the Kyoto Protocol with 37 major industrial countries worldwide confirmed their participation in reducing CO2 emission amount to 18% from 1990 in eight years, starting from 2013 to 2020. To support each country in achieving CO2 emission reduction target set in the global agreement in an economical manner, the Kyoto Protocol announces these three mechanisms, namely:

- International Emissions Trading
- Clean Development Mechanism (CDM)
- Joint Implementation (JI)

As part of the Kyoto Protocol, the United Nations Framework Convention on Climate Change (UNFCCC) has been established to act as monitoring and organizing agency for the above mechanism.

A subsequent development demonstrated these country's commitment which was further enforced in the Climate Change Conference of Parties in Paris (COP Paris) 2015, aiming to keep the global warming temperature below 20 C until 2030. This agreement on emission reduction effort on a global scale has bound 197 countries globally, including Indonesia. The agreement also spawned the Sustainable Development Goals (SDGs) initiative to be implemented in 2015-2030.

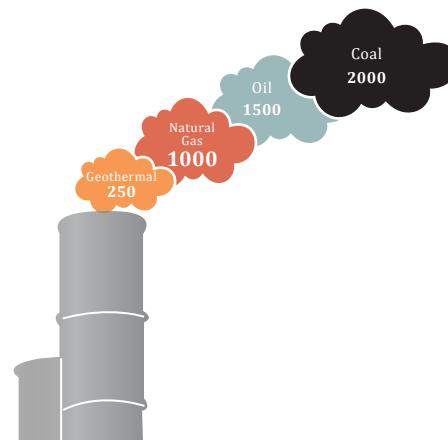
Indonesia, with its own effort, has committed to reducing greenhouse gas (GHG) emissions by 26% by 2020, as compared to a business-as-usual baseline. It may also achieve 41 percent of the result if an international support is present as outlined in Sustainable Development Goals (SDGs) initiative, a replacement for the Millennium Development Goals (MDGs) initiative. SDGs formulate 17 globally sustainable development objectives.

As a commitment to participating in the achievement of SDGs, Indonesia has developed a core program to reduce GHG emissions by covering five focus areas: agriculture, forestry and peatland, energy and transportation, industry, and waste management. Star Energi Geothermal Wayang Windu Limited (SEGWWL), as part of the business community in Indonesia and the global community, is committed to participating in joint efforts to optimize CO2 emission reduction potential derived from a geothermal power plant (PLTP) operational activities.

Electricity powered by geothermal energy (a type of renewable energy) has an enormous potential to reduce greenhouse gas (GHG) emissions, especially CO2 (carbon dioxide). GHG emission levels from a PLTP power plant generating each Lbs/MW-hr unit is the lowest compared to other types of fuel-generating power plants, as shown in the following table.

Types of Power Plant	Types of Energy Source	Types of Emission Unit	CO <sub>2</sub> Equivalent
PLTP	Geothermal	Lbs/MW-hr	250
PLTGU	Gas	Lbs/MW-hr	1,000
PLTU	Crude oil	Lbs/MW-hr	1,500
PLTU	Coal	Lbs/MW-hr	2,000

**Comparison of CO2 Emissions from Various Power Plant Types (Lbs/MW/Hr)**



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To maximize GHG emission reduction coming from PLTP power plant operational activities, we employ various environmental management and environmentally-friendly operational programs. These programs lead to two main objectives:

- Maintain and restore environmental sustainability in order to support long term geothermal PLTP power plant operational activities.
- Demonstrate participation in energy and water conservation, greenhouse gas emission reduction, decrease and utilize B3 and non-B3 wastes and protect biodiversity.

To demonstrate a high commitment of environmental protection and participation in CO<sub>2</sub> emission reduction effort, the Company's management has constituted its own policies, targets, programs and implemented monitoring, as well as a post-evaluation program of its environmentally friendly operations.

## POLICIES

The Company's commitment in managing operational activities while at the same time sustaining the environment is set forth in the policy of "SHE Corporate Policy" outlining: "Star Energy is committed to the highest standards of Occupational Health and Safety (OHS) performance. Each operational area is environmentally managed as a safe and secure workplace for both workforce and the surrounding communities through numerous activities, such as:

- Proactively prevent injuries, occupational diseases, asset damage and environmental pollution, as well as avoid exposing workers, community contractors and the surrounding environment to hazards, in order to ensure business sustainability.
- Execute sustainability strategies in day-to-day activities by enforcing energy efficiency, reducing emission, water conservation, toxic and hazardous waste (B3) and non-B3 waste management and biodiversity protection.

We are certain that our Company's environmental policy align with the concept of sustainable global development goals (SDGs). These various environmentally-friendly operational programs applied together with our environmental conservation programs are also in line with the below-mentioned sustainable global development goals (SDGs), namely:

- Goal 6 – Clean Water and Sanitation – Ensure availability and sustainable management of water and sanitation for all
- Goal 7 – Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 13 – Climate Action – Take urgent action to combat climate change and its impacts
- Goal 15 – Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

## IMPACT, RESPONSES AND WAYANG WINDU MITIGATION TO IMPROVE ENVIRONMENT QUALITY [GRI 307-1]

As a commitment to improving environmental conditions, we substantiate our mitigation program, advance environmental condition and management, according to the analysis on the impact of our operational activities. Here below is the summary.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**

Impacts	Causes	Environmental Programs
Noise	Well tests, power plant operation and cooling towers	<ul style="list-style-type: none"> <li>- Rock muffler installation, noise monitoring</li> <li>- Revegetation around PS, SS-1 and well pad</li> </ul>
Water and Soil Pollution	Drilling activities, domestic activities, B3 and non-B3 waste, oil and diesel storage	<ul style="list-style-type: none"> <li>- Domestic wastewater treatment by installing wastewater treatment plant (IPLC)</li> <li>- Secondary containment installation at fuel and oil storage location</li> <li>- Water well maintenance and rehabilitation</li> <li>- Drilling and cutting waste utilization through co-processing</li> </ul>
Air Pollution	Well tests, air conditioners, vehicle emissions and land clearing	<ul style="list-style-type: none"> <li>- Usage of R-417a Material as a more environmentally friendly refrigerant cooling system</li> <li>- Online well testing system implementation</li> <li>- Usage of caustic soda to abate H2S emission in well testing</li> </ul>
Water Wastage	Support, maintenance and drilling activities	<ul style="list-style-type: none"> <li>- Filling up water basins of cooling tower from the adjacent unit at Unit 2 start-up</li> <li>- Eliminating make up water inside cooling towers with direct contact condenser</li> <li>- Using condenser to replace surface water during drilling process and fire pump testing</li> </ul>
Biodiversity loss	Land clearing	<ul style="list-style-type: none"> <li>- Revegetation program in PLTP power plant and critical environmental areas beside the operational areas (Perhutani or PTPN areas)</li> <li>- Implementation of plant nursery and floriculture</li> <li>- Deer breeding program in cooperation with PTPN</li> </ul>
Traffic Congestion	Moving tools and materials	<ul style="list-style-type: none"> <li>- Scheduling transportation and movement of tools and materials</li> <li>- Traffic control procedures, securing equipment/material transportation and cooperation with the police</li> <li>- Infrastructure maintenance and repair of ring-road operation areas</li> </ul>

Besides, we also have established high standard operational procedures by affirming and demonstrating occupational safety and health as a top priority to mitigate the risk of fatal workplace accidents, which may lead to uncontrollable steam bursts. We also apply similar standards to our partners, contractors, goods and services suppliers, especially those related to on-site inspections, such as in steam wells as well as in power plant and electric power transmission installations.

To add, in ensuring our compliance with K3 standard work procedures and meet all environmental requirements, we also carry out periodic performance screening of potential partners and new contractors by enacting the Contractor Safety and Health Management Management System (CSMS). From the monitoring results, during 2016 did not find any non-compliance cases and therefore no monetary sanctions for non-compliance.

**IMPACT OF CLIMATE CHANGE ON OUR BUSINESS ACTIVITIES [GRI 201-2]**

One of the real impacts of changing atmospheric environmental balance due to GHG emissions (such as CO<sub>2</sub>, methane, freon and so on) is a global climate change characterized by extreme weather conditions in certain areas, such as prolonged summers and highly intensive rainy seasons. This condition may cause a major flood on high terrains and landslides in mountainous areas. Landslide may also be triggered by two main causes: lack of vegetation due to the conversion of forest areas into plantation areas, and high intensity of the rain.

Global climate change also financially affects our operational activities. The ecosystem disruption near geothermal steam pipelines around the hills after the slopes being transformed into an agricultural area disables it to

withstand high rain intensities. In early May 2015, there was a landslide that cut off the closest pipeline. This led us to hold on the operational activities at the power plant. This operational suspension lasted for several months, resulting in a potential loss of our retail electricity revenue.

After several physical improvements through the reinstatement program, we were able to operate by the end of 2015 and recuperate gradually to full operational capacity by 2016.

### **RISK-BASED GEOHAZARD POTENTIAL MANAGEMENT IN WAYANG WINDU GEOTHERMAL POWER AREA**

In relation to the unfortunate landslide that occurred in 2015, Star Energy Geothermal (Wayang Windu) Ltd initiated a scheme to manage the potential risk of landslides around the Wayang Windu Geothermal Power Area, which may directly impact the safety and the facilities of the Company.

Not only against landslides, this management scheme is also taking into account all other types of geohazards, such as slope failures, debris flows, and rock falls.

The geohazard management is conducted systematically through these following stages:

- a. Mapping of geohazard potential areas, based on field visual observations. This is to identify geohazard-prone features, such as soil types, slope gradients, land cracks, spring water, ancient landslide tracks, types of rock, etc.
- b. Conducting risk level assessment in each area based on the probability of the occurrence and the impact that may arise.
- c. Sorting the areas based on their risk levels of low, medium, and high.
- d. Determining the mitigation measurements of each area based on its risk level. Low risk: Periodic visual monitoring. Medium risk: Periodic monitoring using monitoring tools such as inclinometers, extensometers, and nuki-ita. High risk: countermeasures and periodic monitoring using the monitoring tools.



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- Particularly in high risk areas, engineering studies will be conducted to assess the slope safety factors through numerical studies and to design countermeasures, should the safety factors be lower than the designated requirements.
- Countermeasures development, based on the planned design.
- Re-evaluation of the risk level based on the periodic monitoring results. Should the monitoring results indicate progressive land movements, then the risk level must be reassessed, starting from stage (a) and so forth.
- Through systematically managing the potential risk of geohazards as described above, the assessment plan is expected to lower the level of geohazard risk that can occur at an acceptable level.

## » Types of Geohazard

Mapping geohazard-prone areas should consider all types of geohazard shown in table 1 below. Each type has its own characteristics, making the handling of each one a specific task.



### Landslide

#### General Characteristics

- Slope < 30 degrees
- Slow speed of movement ( 0.01-10 mm/day)
- Type of soil: clayey soils and weathered rocks



### Slope Failure

#### General Characteristics

- Slope > 30 degrees
- Very fast movement
- Type of soil: residual soils, highly weathered or jointed rocks



### Debris Flow

#### General Characteristics

- Slope > 3 degrees and < 15 degrees
- Very fast movement
- Containing material from collapsible slope



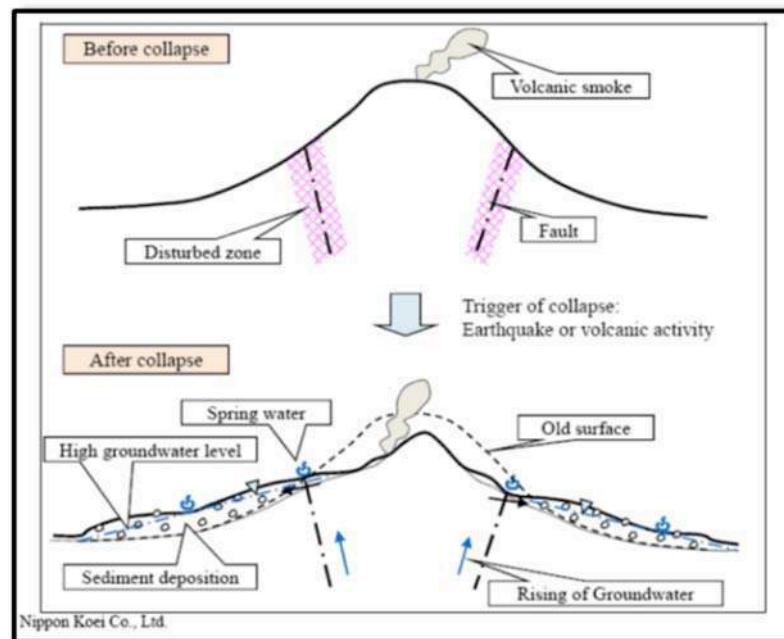
### Rock Fall

#### General Characteristics

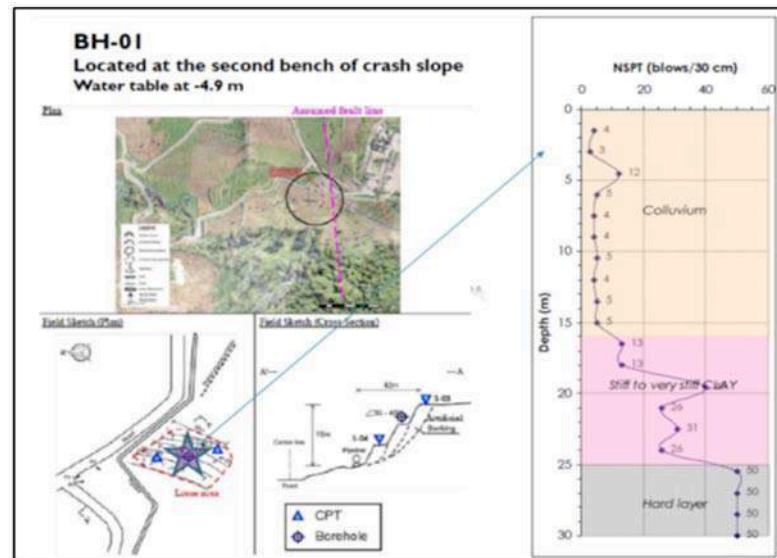
- Slope > 60 degrees
- Very fast movement
- In the form of free falling or rolling movement of rocks and boulders

## General Conditions in Geothermal Areas

The location of a geothermal area is always above a massive wreckage of mountain sediments. If these sediments are situated on a certain slope that exceeds a particular tilting degree and is triggered by the decreasing soil shear strength caused by high ground water levels, then in that respect landslides are likely to occur.



Condition of geothermal area in general



Soil conditions are common in geothermal areas

Therefore, a careful management of potential landslides in geothermal areas is indispensable. Soil conditions commonly found in geothermal areas are as follows:

- Hills with a sloping level of 200-450 or even more;
- Colluvium layer with a thickness of 2-15 metres as in Figure 3;
- High ground water level.

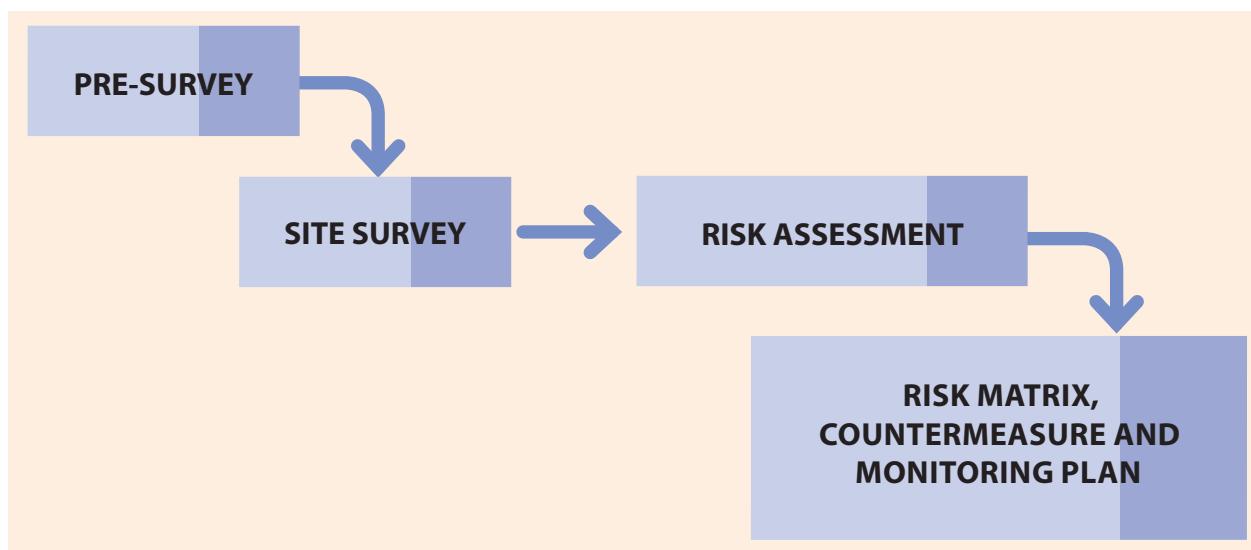
Colluvium is an unconsolidated soil that is very loose in nature due to the effect of gravity. If colluvium is situated on a fairly sloping surface and the groundwater level is high enough, then the potential of the colluvium movement is very high. Colluvium soil movement is a common cause of landslides in geothermal areas.

## Mapping and Risk Assessment

Mapping activity begins with the pre-survey and followed by the site survey. Based on the result of the site survey, a risk assessment will be conducted.

The activities conducted during the pre-survey are data collection and topographic interpretation. The data collected from the pre-survey cover the aspects of: geological, stratigraphy, lithology, topography, rainfall data, existing wells, transmission channels, and previous study results. These data are interpreted to produce a topographic interpretation map. Through this map, we can determine the areas that are categorized as large collapse deposition, talus, bedrock, fracture, etc. In that sense, the areas can be predicted as to whether they have geohazard potentials.

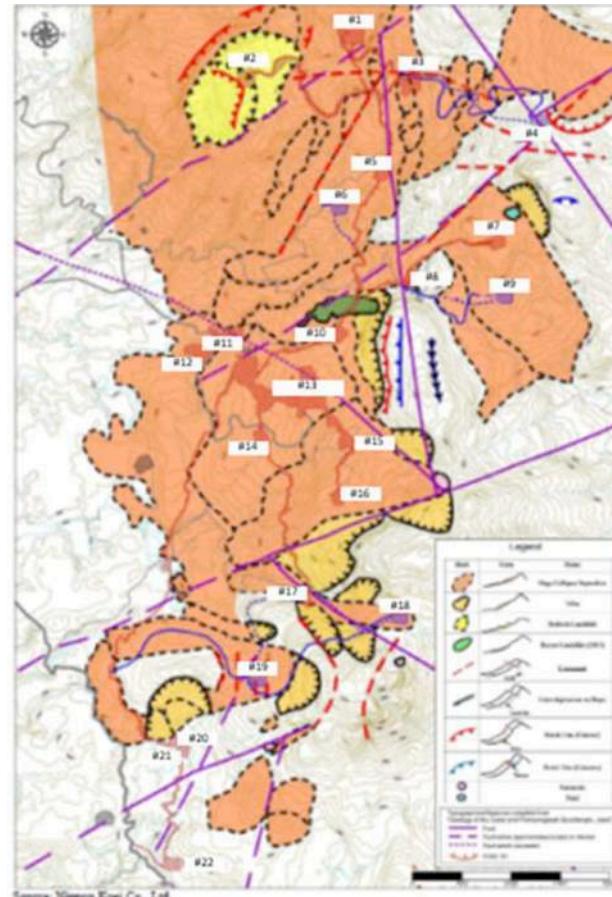
#### **COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**



### Additional Risk Assessment

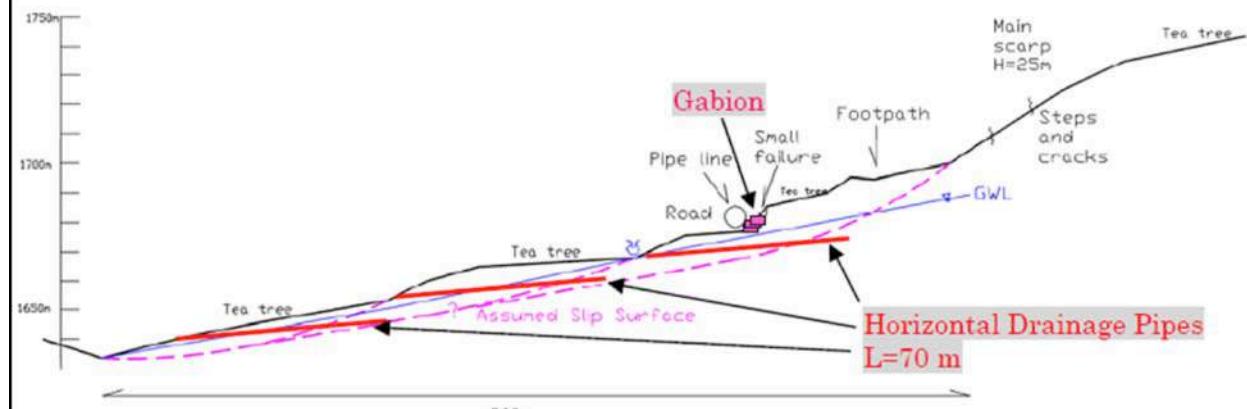
Site survey is conducted by 3 experts; geologist, landslide engineer, and hydrogeologist. The Geologist is in charge of recognising geological phenomena associated with geohazards, such as land cracks, termites infestation, and so forth. Landslide engineer performs stability assessment on the slope. Hydrogeologist is in charge of identifying the water flow system and tasked to find spring water as an indication of ground water level. The results of this survey site are documented in the Inspection Check Sheet, which contains:

- Name of the location including latitude, longitude, elevation
- Date of Inspection
- Name of Inspector
- Plan View
- Photographs of Findings
- Risk Assessment
- Risk Evaluation: Countermeasure – Special Monitoring – Regular Monitoring
- Conceptual countermeasure (if required)
- Special monitoring plan (if required)



### Topographic interpretation map

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No. 22	Site Name: #22	Inspection Date: 19/10/2015	Inspectors: *HK, TN, KK
Latitude: <del>aa°bb'cc"S</del>	Longitude: <del>dd°ee'ff"E</del>	Elevation: 1,635 m-1,720 m	
Risk Evaluation: Countermeasure		Special Monitoring	Regular Inspection
 <p>Rough Countermeasure Plan (Cross Section)</p>			

Example for inspection check sheet

### Risk Level Selection through Risk Matrix

After the risk assessment is conducted, the risk level is assessed using the risk matrix. Risk level is defined as the multiplication between the level of geohazard activity and the level of impact on the facility. The definition of activity level is shown in Table 2, whilst the definition of the level of impact on facilities is described in Table 3.

Risk levels are divided into 3 categories:

- low (green)
- medium (yellow)
- high (red)

In the low-risk areas (green), regular inspection is performed, whilst in the middle-risk areas (yellow), special monitoring is performed using the monitoring tools, such as inclinometer, extensometer, and nuki-ita. In high risk areas (red) there will be a specific case of engineering review to evaluate slope safety factors and to design the countermeasures should the safety factor still be lower than the designated requirements.

## COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT

**Table 2. Geohazard Activities Level**

Level	Landslide	Slope Failure	Rock fall	Debris Flow	Remarks
III (High)	<ul style="list-style-type: none"> <li>• Obvious open cracks are observed.</li> <li>• Slope is located around the active landslide.</li> </ul>	<ul style="list-style-type: none"> <li>• New slope failure is observed in the surrounding slope</li> <li>• Open cracks with continuity are observed</li> </ul>	<ul style="list-style-type: none"> <li>• Completely loose rocks, which are removable by manual power, are distributed</li> </ul>	<ul style="list-style-type: none"> <li>• Riverbed gradient is over 15 degrees, and new gully erosion is observed</li> <li>• New debris flow deposition is observed on the riverbed</li> </ul>	<ul style="list-style-type: none"> <li>• Phenomena which obviously affect facility in the rainy season are observed around the facility</li> </ul>
II (Middle)	<ul style="list-style-type: none"> <li>• Unclear cracks are observed</li> <li>• Recent activity is not observed, but local activity such as small failure is observed</li> </ul>	<ul style="list-style-type: none"> <li>• Trace of slope failure is observed</li> <li>• Unclear cracks are observed</li> <li>• Surface creep is observed</li> </ul>	<ul style="list-style-type: none"> <li>• Loose rocks, which are not removable by manual power are distributed</li> <li>• Local rock fall is observed</li> </ul>	<ul style="list-style-type: none"> <li>• Riverbed gradient is over 15 degrees</li> <li>• Debris flow deposition covered by grasses or bushes is observed on the riverbed</li> </ul>	<ul style="list-style-type: none"> <li>• Phenomena which are assumed to affect facility in the rainy season are observed around the facility</li> </ul>
I (Low)	<ul style="list-style-type: none"> <li>• Old landslide landform is observed</li> <li>• Old cracks/steps are observed</li> </ul>	<ul style="list-style-type: none"> <li>• Trace of slope failure is observed</li> <li>• No cracks are observed</li> </ul>	<ul style="list-style-type: none"> <li>• No loose rock and boulder are observed</li> </ul>	<ul style="list-style-type: none"> <li>• Riverbed gradient is over 15 degrees</li> <li>• Debris flow deposition covered by trees is observed on the riverbed</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear phenomenon is observed around the facility</li> </ul>

**Table 3. Level of Impact on Facilities**

Level	Landslide
3 (High)	<ul style="list-style-type: none"> <li>• Facility has severe damage</li> <li>• It will take a month or more for facilities to be recovered</li> </ul>
2 (Middle)	<ul style="list-style-type: none"> <li>• Facility has normal damaged</li> <li>• It will take a week or more for facilities to be recovered</li> </ul>
1 (Low)	<ul style="list-style-type: none"> <li>• Facility has taken a slight damage</li> <li>• It will take a few days to repair the facilities</li> </ul>

Influence to facility	3	Special Monitoring	< Zone II > Countermeasure	< Zone I > Countermeasure
		Regular Inspection	Special Monitoring	< Zone II > Countermeasure
		Regular Inspection	Regular Inspection	Special Monitoring
		I	II	III
		Activity		

Matriks resiko

**Land Movement Monitoring**

Regardless of the risk level, there will always be a recommendation for monitoring (inspection). If the risk is low, the monitoring is conducted in a form of visual inspection. If the risk is medium or high, the monitoring requires ground movement measuring devices, such as extensometer, nuki-ita, inclinometer, rain gauge, and piezometer.

Extensometer and nuki-ita are tools to measure ground movement on the surface. The extensometer is suitable for

measuring ground movement on a slope where the distance between the moving point and the fixed point situated is quite far, while the nuki-ita is suitable for measuring movement which caused by the land cracks. Inclinometer is used to identify sub-surface movements in order to identify the depth of the slip surface. Rain gauge is used to measure rainfall, whilst piezometer is used to measure the height of ground water level. Rainfall data and groundwater data are used as the supporting data for analysis of whether the soil movement is closely related to groundwater level and rainfall.

## Direct : for surface & subsurface soil movement monitoring



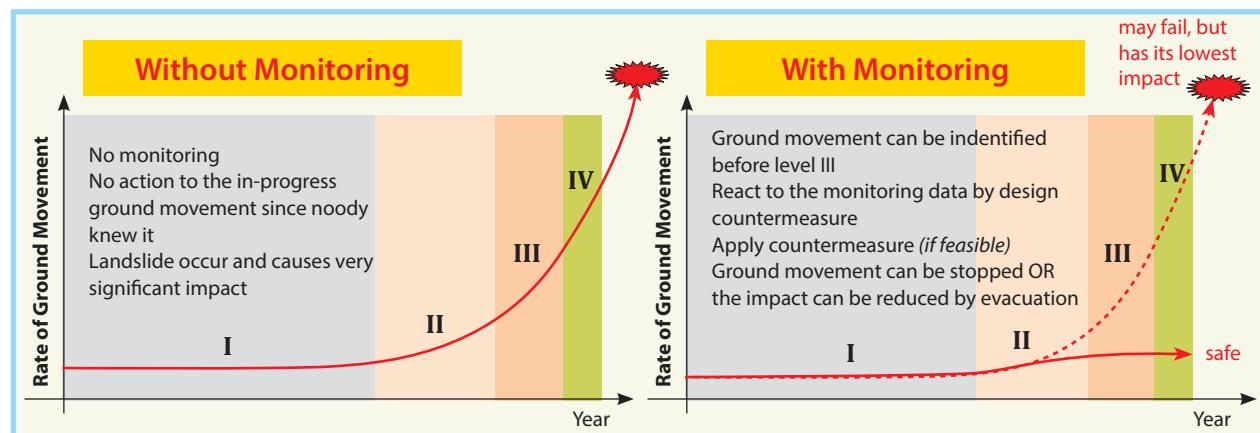
## Indirect : for supporting data



The concept of geohazard monitoring

Without geohazard monitoring, it is impossible to determine whether there is a movement of land or not and in that respect – there will be no actions taken. As a result, when the movement of land occurs in the area, the impact of losses caused from this will be extremely large, due to

the lack of control. In contrast, if the monitoring geohazard is conducted, the situation will be deemed as under control as to whether there is movement of the soil and it can be known as early as possible, so that mitigation actions can be well planned and the impact of potential losses can be suppressed.



The concept of geohazard monitoring

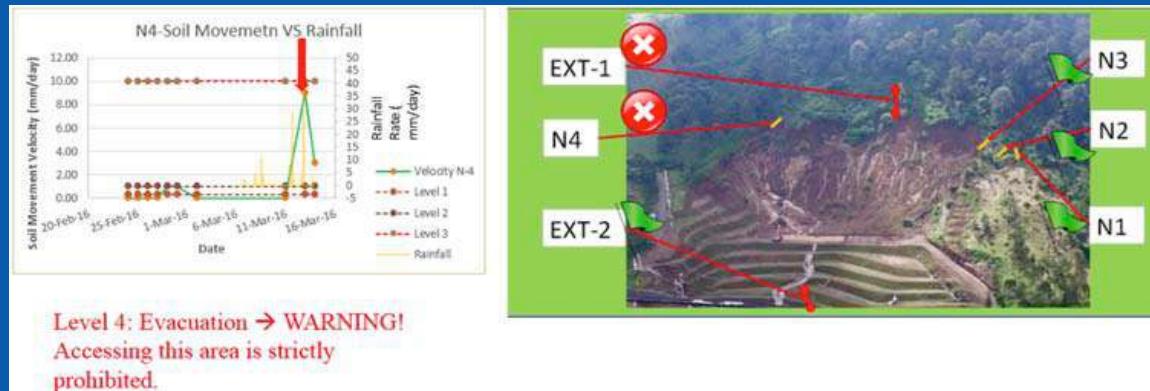
If there is an indication of land movement, an action will be taken according to the rate of movement of the land surface. The rate of land movement is divided into 4 levels. In the event of Level-4, the evacuation process must be executed.

## COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT

## » A Case Example of Ground

Nuki-it N4 was mounted on the north side of the Cibitung landslide peak. The observer showed the speed level of movement increased to level 2 and almost towards level 3, resulting in the issuance of a ban to enter the affected areas. A few days after this

ban was issued, slope failure occurred, but this had no impact on human safety or facilities because the warning had been given beforehand. This example shows the success of geohazard monitoring.



Examples of geohazard monitoring results

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Star Energy Geothermal (Wayang Windu) Ltd have been implementing the risk-based geohazard management. Based on the experience of the past 2 years, our geohazard management has been proven to be effective and efficient. The Geohazard issues have been handled systematically and thoroughly. The process of geohazard monitoring has also been proven several times to successfully predict avalanches, so that their impact can be suppressed.

This risk-based geohazard management is to be continued and enhanced. It is in the mutual interest of all stakeholders that the risk of landslides can be properly managed at all times.

## BIODIVERSITY

The topography of our mining work area (WKP) is 12,960 ha, which consists of mountains with valleys and hills located at an altitude of about 1,700-2,000 m above the sea level. The ecosystems around Wayang Windu Operational Area are close to protected forests and production forests, in the form of a tropical lower mountain forest. The surrounding geographical condition is situated around the hills and flanked by two mountains. In that respect, any activities that potentially change the landscape, such as land clearing for exploration activities, exploitation, and pipeline construction in protected forest areas can lead to shifting condition of its diversity – of plants and wildlife species alike.

To mitigate these impacts and risks that may occur, we have applied an eco-friendly scheme (green field) as a form of commitment of the Company to the sustainability aspect of the environment, as well as to carrying out various protective measurements, including:

- Listing the flora and fauna species,
- Construction of disposal area as part of preparation for reclamation phase,

- Implementing rules to limit the interaction of project staff in protected forest areas to minimize contact with the habitats and species present therein,
- Cultivating seeds in the Company's Nursery located at the project site.

## Biodiversity Program - Realisation of Revegetation and Rehabilitation Program

[GRI 304-3]

### A. Revegetation Efforts at Recharge Area

In our annual program, we continue to improve the quality of habitat in the vicinity of operational area by conducting revegetation program, especially in critical lands. In 2016 we conducted planting and replenishing of dead plants, with a total of 25,049 trees, comprising eucalyptus, coffee, rasamala (*Altingia excelsa noronha*), pine, kibadak (*alnus nepalensis*), gmelina (*gmelina arborea*), avocado, jackfruit and calliandra trees. In relation to the continuation of revegetation and rehabilitation program in the recharge area adjacent to MB-D, WW-Q and WW-A production wells, with a land area of 17.26 ha, we have conducted an effort to involve the local community in the program from the time of planning, planting, and also in the treatment of the trees. With the realisation of the tree planting, the accumulated number of crop that has been planted as part of our effort in greening since 2002 until the end of 2016 was 614,476 trees.

The tree planting activities are expected to mitigate the negative impact of greenhouse gases, by absorbing an equivalent of 9,481.7 tons of CO<sub>2</sub>e per year (assuming all the trees are alive). We believe that the revegetation program contributes greatly to the environmental sustainability as well as the sustainability of steam availability for the Company's operational activities. We are committed to continuing the program according to the revegetation plan map that has been developed together with all relevant stakeholders.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT****Total Accumulated Number of Trees in Wayang Windu Field, 2002-2013**

Year	Location	Number and Type of Trees
2002	Soil Disposal Unit 1	13,000 pine trees
2003	46 Ha Forest around Wellpad WW-A	45,980 Eucalyptus sp; 7,360 Persea Americana
2004	Forest Around Wellpad WW-A	80,000 Mulberry trees
	Power Plant Area and Tea Plantation	7,500 Suren, 2,700 Eucalyptus Sp
2005	Power Plant Area and Tea Plantation	1,000 Silver Oak trees
2006	Power Plant Area	3,000 Silver Oak trees
	300 Ha of Perhutani Land Area	3,00,000 Arabica Coffee seedlings
2007	Power Plant Area	12,100 Suren, Silver Oak & Cypress trees
2008	Critical Area around WWS, MB-D, MB-A, MB-D Wellpad ± 20 Ha	5,803 Altingia Excels; 4,096 Toona Sureni; 3,818 Eucalyptus Sp; 9,214 Eucalyptus Flatifolia; 4,800 Cyprus; 1,022 Accacia Decuren; 4,802 Persea Americana. Total number of trees: 33,555
	Critical Area around WW-Q and MB-D Bridge ± 15 Ha	38,825 Eucalyptus Sp
2009	20 Ha of Critical Area around Lake Aul	6,500 Suren, 4,400 Damar; 2,200 Silver Oak; 8,800 Eucalyptus Sp. Total 22,000
2011	MB-C Wellpad area	Various wooded trees: 4,894 Eucalyptus Sp; 4,894 Silver Oak, 4,894 Cyprus. Total 14,682 trees
2012	Internal Power Plant: PS, SCC area, Well Pad Ares, MB-D Bridge, WW Village, Low Point Sukaratu, Low Point Cibolang, Warehouse-1, Warehouse-2 and SS-1 area	Total 2,785 trees
2013	Open Area along the pipelines of warehouse WW-A, WW-S and MB-D	1,114 Suren; 426 Sengon; 239 Sobsi, and other types, such as Huru, Kihujan, Bungur, Eucalyptus, totaling 2,100 trees
2014	Re-charge area near the production wells of MB-A, MB-B, WW-S and WW-A	7,900 trees consisting of Puspa, Rasamala, Manglid Baros, Eucalyptus, Semgon and Suren trees
2015	Re-charge area near WW-Q	5000 trees consisting of Eucalyptus, Suren, Rasamala, Avocado, Baros, Sengon, Pine, and Puspa trees
2016	7 Ha of PTPN VIII Kertamanah Land Area (MBD Corridor & WWQ)	8,432 trees (Coffee, Eucalyptus)
	9,7% Ha of Perhutani Land (Cibitung and WWA)	16,267 trees (Eucalyptus, Rasamala, Pine, Kibadak, Gemina, Avocado, Jackfruit, Kaliandra)
	0,5 Ha of Perhutani Land (Earth Day - SCC)	350 trees (Eucalyptus, Rasamala, Pine)

**Land that Rehabilitated**

### B. Post-Landslide Land Revegetation in Cibitung

The landslide that occurred on 5 May 2015 caused the loss of land and vegetation area of around 10 ha. This convinced us to include the revegetation program as one of our long-term environmental management programs.

This program is carried out in cooperation with Bogor Institute of Agriculture (IPB), which conducted a landslide recovery study. According to the results of the study, we implemented a land revegetation activity with the main objective to restore land function and stabilize the soil. In addition to conducting independent planting activities we are also working with a government agency, Perhutani, to conduct revegetation.



The lower part of the crown location



Landslide areas

Land classified for revegetation is divided into two categories. First is the land in the crown fracture. At this area of 1.26 ha, we do the planting activities independently. The types of plants grown are vetiver (*vetiveria zizanioides*) and mini elephant grass (*Pennisetum purperium schamach*). The vetiver plant serves as a barrier to soil erosion due to its long roots so that it can bind the soil, whilst the mini elephant grass serves to cover the entire land quickly.

Second is the land at the bottom of the crown. On this land of approximately 6 ha, we are doing a revegetation in cooperation with Perhutani, in an agreement that will last for 10 years. Activities undertaken include: planning, planting, and maintenance of plants. Types of plants grown on the spot are Pine, Kibadak (*alnus nepalensis*), Avocado, Rasamala (*Altingia excelsa Noronha*), and magnolia blumei with the number of plants grown in the area as many as 6,897 trees.

## COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT



Picture before revegetation (left) and after revegetation (right)



Revegetation on landslide

Revegetation activities are part of the landslide mitigation effort that has been conducted by the Company. Other efforts that have also been conducted include the Geohazard Mapping Study to map other areas with potential landslides, ongoing monitoring of potential landslides, and cooperation with related parties (local government, Perhutani, PTPN, and local people) to prevent the threat of landslides.

### FLORA AND FAUNA MONITORING, PROTECTION OF ENDANGERED FAUNA

#### [GRI 304-3, 304-4]

We perform a comprehensive flora monitoring in natural forests adjacent to our well drilling site encompassing 9 monitoring sites, namely: WWS, WWA, MBE, MBA, MBB, MBC, SS-1, MBD and WWQ.

#### Flora Monitoring

- **Location 1 (WW-S)**

The results of flora case study at the WW-S location showed a fairly even percentage. Based on this

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percentage, the most dominant type was: saninten (*Castanopsis argentea*) with Importance Value Index (IVI) of 107.74. Saninten had medium density, frequency and diameter values. These values indicated that forest condition in this area was in the category of stable primary forest.

- **Location 2 (WWA)**

The result of flora case study at the WW-A location also showed a fairly even percentage. Based on this percentage, there were two most dominant types, namely: Ki salam (*Syzygium lineatum*) with Importance Value Index (IVI) of 45.27 and kalimorot with IVI of 43.67. Ki salam had medium density, low frequency and diameter values. Whereas, kalimorot had medium density, low frequency and medium diameter values. These values indicated that forest condition in this area was in the category of stable primary forest.



Vegetation forest condition around WWA

- **Location 3 (MBE – Situ Aul)**

Vegetation found in Situ Aul was categorized in the mountainous zone, which meant that the vegetation was situated at an altitude of  $\pm$  1800 m above sea level. The vegetation was composed of trees, pile, stake, tiller, plant, epiphytes and climber. Common tree species included puspa (*Schima wallichii*), pasang



Vegetation condition in the MBA nature forest (around Situ Aul)

tarith (Lithocarpus korthalsii), Ki hujan (*Engelhardia spicata*), cerem (*Macropanax dispermus*) and beunying (*Ficus fistulosa*).

- **Location 4 (MBA)**

The result of flora case study at the fourth location showed an even percentage. The most dominant species was Ki jeruk (*Lavanga sarmentosa*) with the highest Importance Value Index (IVI) of 33.97. Ki jeruk had low density and frequency and medium diameter values. These values indicated that forest condition in this area was in the category of stable primary forest.

- **Location 5 (MBB)**

The result of flora case study at the fifth location showed an even percentage of non-dominant and dominant species. The most dominant types were huru (*Litsea* sp.) with the highest Importance Value Index (IVI) of 57.79 and puspa (*Schima wallichii*) with IVI of 55.55. Huru had medium density and frequency and low diameter values. Puspa had low density and frequency and high diameter values.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**

These values indicated that the forest condition in this area was in the category of stable primary forest. Monitoring at the sixth location (MBC) was mainly focused on the plantation area around MB-C Well Pad. Flora and Fauna monitoring at this location was based on the activity of make-up well program.

- **Location (MB-C)**

The location of MB-C Well Pad belonged to the area of low plant diversity category, because the local

communities have practised vegetable farming activities. Plant species found were agricultural commodities, such as potatoes, cabbages and carrots. Plants other than agricultural commodities found in this location also included pine (*Pinus merkusii*), fir (*Cassuarina junghuhniana*), white paperbark (*Melaleuca leucadendra*), salamander (*Grevillea robusta*), suren (*Toona sureni*), ki hiur (*Castanopsis javanica*) and dekres.



Local farming activities around Well Pad MBC



**Suren** (*Toona sureni*)



**"Kayu Putih"** Trees (*Melaleuca leucadendra*).

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- **Location 7 (SS-1)**

Monitoring conducted at the seventh location was situated in the Separator Station area comprising tea plantation and the SEG revegetation area in the south was planted with pine trees (*Pinus merkusii*). Vegetation on the SS-1 area was still dominated with local species, which indicated that SEGWWL's activity on SS-1 area has not created a considerable negative impact on local/native vegetation sustainability.

- **Location 8 (MBD)**

Monitoring carried on location 8 was part of the MBD Well Support area. Environmental condition around the area was an open field used for horticulture farming. MBD also had an area on the north to be used for revegetation. A type of silver oak (*Grevillea robusta*), kalites/white paperbark (*Eucalyptus deglupta*) and dekres (*Acacia leucophloea*) could be found in this area. Silver oak is a plant originating from Australia, whereas kalites and dekres are both native plants.

- **Location 9 (WWQ)**

WWQ Well Drilling point is located at the coordinates of 791043m E - 9204748m S with an altitude of  $\pm$  1800 m above sea level. Silver oak (*Grevillea robusta*), kalites/white paperbark (*Eucalyptus deglupta*) and dekres (*Acacia leucophloea*) are planted on the edge of WWQ point. The area around WWQ Point was an open field utilized by the local community as a plantation. This type of vegetation was much denser than MBD point after revegetation. Outer site of WWQ had an open area of  $\pm$  500 m<sup>2</sup> which was originally used as a dumping field.

In 2016 the land was utilized as a revegetation area. Species planted here included puspa (*Schima wallichii*), saninten (*Castanopsis argentea*), baros (*Magnolia macklottii*), suren (*Toona sureni*) and silver oak.

#### **Fauna Monitoring and Protection**

Fauna monitoring was conducted in nine locations, namely WWS, WWA, MBA, MBB, MBE, MBC, SS-1, MBD and WWQ. Those locations are situated around Mount Bedil, Mount Wayang, Mount Malabar, Situ Aul and other developed areas.

Fauna monitoring in 2016 successfully recorded 21 species of birds from 19 families found in the monitoring location. There were several species of birds found at these six locations which are often found in numerous habitats, such as cave swiftlet (*Colocallia linchi*), spotted dove (*Streptopelia chinensis*), sooty-headed Bulbul (*Pycnonotus aurigaster*) and plaintive cuckoo (*Cacomantis merulinus*).

Two bird species, black eagle (*Ictinaetus malaiensis*) and white-collared kingfisher (*Halcyon chloris*), were found in all monitoring areas. They are listed as protected species under Law No. 4/1999 on Forestry and Government Regulation No. 7/1999 on Preservation of Wild Plants and Animals. Both species were also found in natural forests around WWS, MBB and MBA areas.

Moreover, a total of 19 bird species belonged to the lower risk category based on the IUCN Red List in 2015. These species can be easily found in both natural forest and agricultural land. **[GRI304-4]**

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT****Conservation Status of Birds Found in SEGWWL's Internal Environment**

No.	Indonesian Name	Scientific Name	Conservation Status			
				CITES	UU	PP
1	Tekukur biasa	<i>Streptopelia chinensis</i>				
2	Anis gunung	<i>Turdus poliocephalus</i>	LC			
3	Cinenen pisang	<i>Orthotomus sutorius</i>	LC			
4	Wiwik kelabu	<i>Cacomantis merulinus</i>	LC			
5	Sikatan biru	<i>Cyanoptila cyanomelana</i>	LC			
6	Cinenen kelabu	<i>Orthotomus sepium (ruficeps)</i>				
7	Bentet Kelabu	<i>Lanius scach</i>	LC			
8	Kepodang emas	<i>Oriolus chinensis</i>	LC			
9	Srigunting kelabu	<i>Dicrurus leucophaeus</i>	LC			
10	Celadi Ulam	<i>Dendrocopos macei</i>	LC			
11	Jalak suren	<i>Sturnus contra</i>	LC			
12	Cucak Kutilang	<i>Picnonotus aurigaster</i>				
13	Puyuh Gonggong Jawa	<i>Arborophila javanica</i>	LC			
14	Elang Hitam	<i>Ictinaetus malaiensis</i>	LC	II		D
15	Cekakak sungai	<i>Halcyon chloris</i>	LC		D	D
16	Beluk Ketupa	<i>Ketupa ketupu</i>		II		
17	Walet Linchi	<i>Collocalia linchii</i>				
18	Burung gereja Erasia	<i>Passer montanus</i>	LC			
19	Cincoang coklat	<i>Brachypteryx leucophrys</i>	LC			
20	Kacamata biasa	<i>Zopterops palpebrosus</i>				
21	Perenjak jawa	<i>Prinia familiaris</i>				

Source: Result of Field Monitoring in May 2016. Conservation Status based on UU No. 41/1999 on Forestry, Government Regulation No. 7/1999 on Preservation of Plants, CITES, and Wild Animals, and IUCN Red List. (2015). LC = Least Concern, D = Protected, II = Category In the Appendix (tradable)

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**Conservation Status of Birds Found in Situ Aul & Surrounding Areas  
(SEGWWL's External Environment)**

No	Family	Scientific Name	Indonesian Name	Dist	UU	IUCN	CITES
1	Accipitridae	<i>Pernis ptilorhynchus</i>	Sikepmadu Asia	-	D	-	App. II
2	Falconidae	<i>Falco moluccensis</i>	Alapalap Sapi	-	D	-	App. II
3	Phasianidae	<i>Arborophila javanica</i>	Puyuhgonggong Jawa	E	-	-	-
4	Turnicidae	<i>Turnix suscitator</i>	Gemak Loreng	-	-	-	-
5	Rallidae	<i>Amaurornis phoenicurus</i>	Kareo Padi	-	-	-	-
6	Columbidae	<i>Streptopelia chinensis</i>	Tekukur Biasa	-	-	-	-
7	Columbidae	<i>Chalcophaps indica</i>	Delimukan Zamrud	-	-	-	-
8	Psittacidae	<i>Loriculus pusillus</i>	Serindit Jawa	E	-	NT	App. II
9	Cuculidae	<i>Cacomantis merulinus</i>	Wiwik Kelabu	-	-	-	-
10	Apodidae	<i>Collocalia linchi</i>	Walet Linci	-	-	-	-
11	Apodidae	<i>Apus pacificus</i>	Kapinis Laut	-	-	-	-
12	Alcedinidae	<i>Alcedo meninting</i>	Rajaudang Meninting	-	D	-	-
13	Alcedinidae	<i>Halcyon cyaniventris</i>	Cekakak Jawa	E	D	-	-
14	Alcedinidae	<i>Halcyon chloris</i>	Cekakak Sungai	-	D	-	-
15	Capitonidae	<i>Megalaima corvina</i>	Takur Bututut	E	D	-	-
16	Capitonidae	<i>Megalaima armillaris</i>	Takur Tohtor	E	D	-	-
17	Picidae	<i>Dendrocopos macei</i>	Caladi Ulam	-	-	-	-
18	Hirundinidae	<i>Hirundo tahitica</i>	Layanglayang Batu	-	-	-	-
19	Campephagidae	<i>Pericrocotus miniatus</i>	Sepah Gunung	-	-	-	-
20	Campephagidae	<i>Hemipus hirundinaceus</i>	Jingjing Batu	-	-	-	-
21	Aegithinidae	<i>Aegithina tiphia</i>	Cipoh Kacat	-	-	-	-
22	Pycnonotidae	<i>Pycnonotus aurigaster</i>	Cucak Kutilang	-	-	-	-
23	Pycnonotidae	<i>Pycnonotus bimaculatus</i>	Cucak Gunung	-	-	-	-
24	Laniidae	<i>Lanius schach</i>	Bentet Kelabu	-	-	-	-
25	Turdidae	<i>Brachypteryx leucophrys</i>	Cingcoang Coklat	-	-	-	-
26	Turdidae	<i>Myophonus glaucinus</i>	Ciungbatu Kecil-Sunda	E	-	-	-
27	Timaliidae	<i>Malacocincla sepiarium</i>	Pelanduk Semak	-	-	-	-
28	Timaliidae	<i>Napothera epilepidota</i>	Berencet Berkening	-	-	-	-
29	Timaliidae	<i>Pnoepyga pusilla</i>	Berencet Kerdil	-	-	-	-
30	Timaliidae	<i>Stachyris melanothorax</i>	Tepus Pipi-perak	E	D	-	-

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**

No	Family	Scientific Name	Indonesian Name	Dist	UU	IUCN	CITES
31	Timaliidae	<i>Pteruthius flaviscapis</i>	Ciu Besar	-	-	-	-
32	Timaliidae	<i>Pteruthius aenobarbus</i>	Ciu Kunyit	E	-	-	-
33	Sylviidae	<i>Tesia superciliaris</i>	Tesia Jawa	E	-	-	-
34	Sylviidae	<i>Cettia vulcania</i>	Ceret Gunung	-	-	-	-
35	Sylviidae	<i>Megalurus palustris</i>	Cicakoreng Jawa	-	-	-	-
36	Sylviidae	<i>Orthotomus ruficeps</i>	Cinenen Kelabu	-	-	-	-
37	Sylviidae	<i>Orthotomus sepium</i>	Cinenen Jawa	-	-	-	-
38	Sylviidae	<i>Phylloscopus trivirgatus</i>	Cikrak Daun	-	-	-	-
39	Muscicapidae	<i>Ficedula hyperythra</i>	Sikatan Bodoh	-	-	-	-
40	Muscicapidae	<i>Ficedula westermanni</i>	Sikatan Belang	-	-	-	-
41	Muscicapidae	<i>Culicicapa ceylonensis</i>	Sikatan Kepala-abu	-	-	-	-
42	Paridae	<i>Parus major</i>	Gelatikbatu Kelabu	-	-	-	-
43	Sittidae	<i>Sitta azurea</i>	Munguk Loreng	-	-	-	-
44	Dicaeidae	<i>Dicaeum sanguinolentum</i>	Cabai Gunung	-	-	-	-
45	Dicaeidae	<i>Dicaeum trochileum</i>	Cabai Jawa	-	-	-	-
46	Nectariniidae	<i>Anthreptes singalensis</i>	Burungmadu Belukar	-	D	-	-
47	Nectariniidae	<i>Cinnyris jugularis</i>	Burungmadu Sriganti	-	D	-	-
48	Nectariniidae	<i>Aethopyga eximia</i>	Burungmadu Gunung	E	D	-	-
49	Nectariniidae	<i>Arachnothera longirostra</i>	Pijantung Kecil	-	D	-	-
50	Zosteropidae	<i>Zosterops palpebrosus</i>	Kacamata Biasa	-	-	-	-
51	Zosteropidae	<i>Zosterops montanus</i>	Kacamata Gunung	-	-	-	-
52	Estrildidae	<i>Lonchura punctulata</i>	Bondol Peking	-	-	-	-
53	Oriolidae	<i>Oriolus chinensis</i>	Kepudang Kuduk-hitam	-	-	-	-
54	Dicruridae	<i>Dicrurus leucophaeus</i>	Srigunting Kelabu	-	-	-	-
				Total	10	12	1

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## Mammals

Ten species of mammals found during observation were then divided into three groups, i.e. smaller (rodents), medium (civets) and larger (primates, big cats and swines) groups. These identified mammals are generally scattered throughout monitoring areas. However, the most common ones found were the small mammals (rodents).

During monitoring, observers also successfully found three large mammal species in Situ Aul forest area, i.e. Javan

leopard (*Panthera pardus melas*), wild boar (*Sus scrofa*) and Javan surili (*Presbytis comata*). The Javan leopard and wild boar are usually identified from their traces and faeces, while Javan surili is observed through direct encounter in Situ Aul forest area.



Surili (*Presbytis comata*)



Long-tailed monkeys (*Macaca fascicularis*)

### Mammals Encountered in the Monitoring Areas

No.	Local Name	Scientific Name	Location of Finding					Description	
			A	B	C	D	E		
1	Tupai kekes	<i>Tupaia javanica</i>		+	+	-	-	-	Direct encounter
2	Babi hutan	<i>Sus scrofa</i>		+	+	-	-	-	Finding of footprints and nesting place
3	Macan tutul Jawa	<i>Panthera pardus melas</i>		+	-	-	-	-	Information from local inhabitants
4	Mentjek/kijang	<i>Muntiacus muntjak</i>		+	-	-	-	-	
5	Monyet ekor panjang	<i>Macaca fascicularis</i>		+	-	-	-	-	
6	Bajing kelapa	<i>Callosciurus notatus</i>		+	+	-	-	-	
7	Bajing	<i>Callosciurus nigrovittatus</i>		+	+	-	-	-	Direct encounter
8	Surili	<i>Presbytis comata</i>		+	+	+	-	-	Voice

Source: Field Monitoring in May 2016. Location of Findings: A = WWS ; B = WWA ; C = MBA ; D = MBB ; E = MBE ; + = Present ; - = Not Found

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**

There are most common primates that are also easy to find. They are the long-tailed macaques (*Macaca fascicularis*), which often appear during harvesting time, red muntjac (*Muntiacus muntjak*) and Javan leopard (*Panthera pardus javanica*). The long-tailed macaque is an endangered species based on IUCN Red List. Whereas according to CITES, this primate species belongs to Appendix I, which means that it is not allowed to be traded at all. Surili is also protected under Government Regulation No. 7/1999 on Preservation of Wild Plants and Animals.

The most important species of mammals in the monitoring sites is Javan leopard (*Panthera pardus javanica*). This species is an endemic species in Java because their presence can only be found in this only island. Javan leopard plays an essential key role as the top predator to maintain the food chain in wild habitats (CWMBC-ICWRMIP 2013). This species is protected under Government Regulation No. 7/1999 on Preservation of Wild Plants and Animals and listed as critically endangered based on the IUCN Red List, as well as on CITES under Appendix I, which means that the endangered species is not allowed to be traded at all. (Table 32).

**Conservation Status of Mammals Encountered in Monitoring Areas**

No	Species Name	Conservation Status			Endemic
		PP 7/1999	IUCN	CITES	
1	<i>Tupaia javanica</i>	-	LC	II	-
2	<i>Sus scrofa</i>	-	LC	-	-
3	<i>Panthera pardus javanicus</i>	D	CR	I	E
4	<i>Muntiacus muntjak</i>	D	LC	-	-
5	<i>Macaca fascicularis</i>	-	LC	II	-
6	<i>Callosciurus notatus</i>	-	LC	-	-
7	<i>Callosciurus nigrovittatus</i>	-	NT	-	-
8	<i>Prebytis comata</i>	D	EN	-	E

Legend: D = protected by Government Regulation No. 7/1999, TD = not protected by Government Regulation No. 7/1999, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, I = CITES Appendix I, II = CITES Appendix II, E = Endemic in Java

**Aquatic Biota (Plankton and Benthos) Monitoring**

We monitor the diversity of aquatic biota, i.e. plankton and benthos around our work area as well. Based on the result of diversity indices in marine phytoplankton analysis from four monitoring locations with value of  $H' \geq 2$  in each sample, it can be concluded that water quality or river ecosystem around SEGWWL area was not contaminated.

There were no specific types of phytoplankton which dominated the ecosystem. Hence, it demonstrated the aquatic ecosystem quality in a balanced condition and SEGWWL activity did not adversely affect or interfere the proportion of phytoplankton population in its surrounding waters.

**Plant Nursery**

Plant nursery and revegetation are two strategic efforts for enhancing environmental condition, especially on the case of critical lands. Plant nursery takes place in WWS, or the inactive well area. Plant nursery and revegetation (or planting native plants) are some of the methods to conserve germplasm on work locations. By December 2016, a number of 40 species of 1,364 trees had been cultivated through plant nursery. The seeds produced by the nursery were then used for revegetation surrounding the Company's operational area and under the framework of cooperation with Perum Perhutani.

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**List of Plants in Nursery (2016)**

No	Nama Tanaman	Latin	Jumlah
1	Saninten	Castanopsis argentea Blume.	68
2	Puspa	Schima wallichiiChoisy	369
3	Rasamala	Altingia excelsa Noronha	90
4	Suren	Toona sureni Blume	64
5	Manglid Baros	Manglietia glauca Blume.	226
6	Sengon	Albizia falcataria L.	8
7	Lengkeng	Nephelium longana Cambess.	8
8	Bungur	Lagerstroemia speciosa L.	8
9	Asem Thailand	Tamarindus indica L.	8
10	Kaliki (jarak)	Ricinus communis L.	3
11	Ki Sireum	Syzygium rostratum	6
12	Huru	Macaranga rhizinoides Blume.	38
13	Alpukat	Persea americana Mill.	27
14	Kayu Putih	Eucalyptus urophylla	76
15	Manglid (biasa)	Magnolia acuminata L.	32
16	Loquat	Eriobotrya japonica	103
17	Serai	Cymbopogon citratus	14
18	Kunyit Putih	Kaempferia rotunda L.	8
19	Terung	Solanum melongena L.	2
20	Terung Belanda	Solanum betaceum Cav.	2
21	Lidah Buaya	Aloe vera Linn.	19
22	Bangle	Zingiber montanum	9
23	Pandan	Pandanus amaryllifolius Roxb.	5
24	Kencur	Kaempferia galanga L.	4
25	Jahe	Zingiber officinale Roscoe	6
26	Jeruk Purut	Citrus hystrix DC.	1
27	Seledri	Apium graveolens L.	14
28	Kunyit	Curcuma longa Linn.	13
29	Kemangi	Ocimum basilicum L.	15
30	Cabai Rawit	Capsicum frutescens L.	81
31	Kumis Kucing	Orthisiphon aristatus	6
32	Okra	Abelmoschus esculentus	2
33	Belimbing	Averrhoa carambola L.	2
34	Mint	Mentha piperita L.	2
35	Bawang Putih Tunggal	Allium sativum L.	20
36	Sirih Merah	Piper crocatum Ruiz & Pav.	1
37	Jeruk Lemon	Citrus limon L.	0
38	Nangka Cempedak	Artocarpus integer (Thunb.) Merr.	0
39	Melon Golden	Cucumis melo L.	1
40	Selada	Lactuca sativa	3
<b>Total</b>			<b>1364</b>

**ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM [GRI 102-12]**

We implement the Environmental Management System (EMS) in an integrated system, called the Wayang Windu Integrated Management System (WIMS), which combines accredited operating standards of ISO 14001:2004, OH SAS 18001:2007, and ISO 9001:2008 in environmental management and monitoring. This has made Wayang Windu the first PLTP in Indonesia to implement an "Integrated Management System".

Wayang Windu environmental management system has been certified by Lloyd's Register Quality Assurance Limited since 2007 and has been three times ISO 14001:2004 certified, with audit results without any major findings. The last recertification was carried out on 10 February 2016 and is the certification is valid until 14 September 2018.

Our environmental management and monitoring programs cover all operational aspects, including: Efficiency of Material Use, Energy Efficiency, Emission Reduction, 3R of B3 Waste, 3R of Non-B3 Solid Waste, Water Efficiency and Water Pollution Reduction, and management of biodiversity, described respectively as follows:

**Material Use [GRI 301-1, 301-2]**

In the geothermal power plant (PLTP) system, the amount of power generated depends on the production of steam as the main material that can be channelled to the generator turbine system. Therefore, we carry out the maintenance and optimization of the existing production wells and maintenance of the turbine generator regularly, besides drilling of new steam production wells, in order to improve the efficiency of the steam conversion into optimum power.

Currently we are operating PLTP units 1 and 2, and meanwhile, to maintain power generation in units 1 and 2, we carry out the make up well drilling program from production wells in the existing location.

The Wayang Windu make up well program is a drilling program conducted at the operating stage, in order to maintain steam capacity for the generation of existing units (units 1 and 2), with a capacity of 227 MW.

In 2016, there were about 5 wells drilled in the make up well drilling program.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT*****Materials Used in the Generators' Operating Processes***

Description	Unit	Description	Period			
			2013	2014	2015	2016
Steam Generator Unit-1	Ton	Renewable Raw Material	6,609,734	6,464,802	4,035,364	6,823,827
Steam Generator Unit-1	Ton	Renewable Raw Material	6,804,868	6,725,747	3,969,529	7,037,910
Caustic Soda	Kg	Used Auxiliary Materials	550,74	319,884	252,530	210
Biosoda, Sulphur 3DT Trasar, and Dispersant	Liter	Used Auxiliary Materials	16,796	16,452	13,751	16,576

In addition to geothermal steam, other materials used are caustic soda and biosoda. Caustic soda is used to neutralize the pH or acidity level of cooling water, while biosoda is used to control algae growth. Both are useful for removing gas content (0.6-2.6%), especially CO<sub>2</sub> and H<sub>2</sub>S in non-condensed geothermal steam in the condenser, so as not to damage the generator turbine. The total requirement for caustic soda in 2016 was 210,000 252,530 kg (252,530 kg in 2015) while the biosoda was 16.576 liters (13,751 liters in 2015). Both materials are consumable and non-renewable.

**Energy Management and Efficiency**

We carry out various programs to optimize the operations of power generation system as well as to implement the energy efficiency program as a form of participation in the GHG emission mitigation efforts. We continue to apply engineering at the cooling tower by controlling sulphur deposit in the cooling tower and cooling water distribution pipes (Cooling Tower and Water Pipe Distribution Sulphur Deposition Control). This program is intended to control the sulphur deposit discovered in CT fill, pipeline systems, spray nozzles, etc. This sulphur control can suppress the formation of sulphur deposit so that it can generate energy efficiency amounting to 3.94 GWh.

As in the previous years, we also continue implementing some other engineering programs that also help to improve total energy efficiency. In addition to energy efficiency program to improve the performance of electricity production facilities, we implement energy-saving initiatives for other supporting activities, through the following programs:

- Use of energy-saving lamps
- Replacement of coolant in the refrigeration system, from Freon R22 to R417A, to reduce Ozone Depleting Substances (ODS) emissions while reducing power consumption
- Implementation of operational vehicle usage management
- Implementation of LPG saving policy
- Installation of GPS in every operational vehicle and implementation of the travel route setting procedure. Generally, in 2016 we conducted a total of 19 operational optimization programs in the form of engineering implementation and other energy-saving activities, which resulted in an increase in total energy efficiency by up to 161.18 GWh, as shown in the following table. All numbers that listed in the table are a combination of the calculation result and recording using a specific measuring instrument. [GRI 302-4]

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**Energy Efficiency**

Program	Unit	Year				
		2012	2013	2014	2015	2016
Optimal steam rate utilization without reducing power generation	GWh	17.52	17.52	17.52	17.52	17.52
Reducing use of electricity by conducting gravity strategy on brine and condensate injection system	GWh	5.25	5.25	5.25	3.94	5.25
Modification of Condenser Nozzle Unit 1	GWh	13.14	13.14	13.14	9.86	13.14
Water Pipe Cleaning at Cooling Tower Unit-1	GWh	17.52	17.52	17.52	13.14	17.52
Change of Duration of Steam Free Test Unit-2	GWh	0.39	0.39	0.49	0.30	0.39
Redesigning of cooling tower funnel Unit-1 for design implementation in cooling tower Unit-2	GWh	12.6	12.6	12.6	9.50	12.61
Use of monitoring technology for the engine lubrication conditions of Unit-1 and Unit-2	GWh	1.22	1.22	1.22	1.22	1.22
<i>Use of Monitoring Technology of Engine Lubrication Condition Unit-1 and Unit-2 (Condition Base Monitoring)</i>	GWh	1.22	1.22	1.22	0.92	3.94
Implementation of sulphur control in cooling water system to maintain cooling system performance	GWh	3.94	3.94	3.94	2.96	0.12
Replacement of Freon R22 with R417A	GWh	0.12	0.12	0.12	0.09	12.61
Redesigning of cooling tower funnel Unit-1	GWh	12.61	12.61	12.61	9.46	17.22
<i>Simultaneous Operation (SIMOP) Program</i>		13.44	17.76	26.76	10.08	0.02
Power savings by replacing Fluorescence lamps to LED ones	GWh		0.05	0.02	0.02	0.29
Fuel optimization of operational vehicles	GWh	0.69	0.70	0.29	0.29	0.83
Replacement of LPG fuel with environmentally-friendly electricity on dryer and stove operations	GWh	1.61	2.03	0.83	0.83	0.43
The replacement program of several diesel-fueled gensets or pumps to environmentally-friendly power	GWh	0.34	1.72	0.43	0.43	17.52
<i>Blade Cooling Tower Inspection Program</i>	GWh	17.52	17.52	17.52	6.57	40.42
<i>Well Intervention Program</i>	GWh		8.64	127.44	28.8	0.0009
Power savings through installation of solar energy panels	GWh	0.0009	0.0009	0.0009	0.00070	0.11
<b>Total</b>		<b>117.94</b>	<b>132.75</b>	<b>248.87</b>	<b>110.27</b>	<b>161.18</b>

**Energy Intensity [GRI 301-2, 302-3]**

The implementation of various energy efficiency programs and improvement of the power plant equipment performance has generated a total gross electricity production in 2016 of 1,991,211 MWh (7,168,359 GJ). Total usage of electricity (house load) of all activities, which we have successfully managed through various efficiency programs, amounted to 66,570 MWh (239,651 GJ). Electricity requirements for the operational activities include: electricity supply for power equipment and auxiliary and ancillary devices, such as for lighting of Administration Building, employee housing in the field, and utility lighting.

Therefore, the total net power electricity that could be transferred to PLN network as the buyer was 1,923,953 MWh (6,926,230 GJ). The intensity of energy use compared with the amount of power generated was 3.46%.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT****Power Production and Use**

Description	Unit	Year				
		2012	2013	2014	2015	2016
Gross Production	MWh	1,933,845	1,944,312	1,848,434	1,152,607	1,991,211
	GJ	6,961,840	7,000,311	6,703,483	4,149,386	7,168,359
Internal Use	MWh	66,546	68,083	67,660	42,072	66,570
	GJ	239,569	245,099	245,374	151,459	239,651
Net Production	MWh	1,867,299,00	1,879,580	1,780,774	1,111,244	1,923,953
	GJ	6,722,271	6,755,212	6,458,109	4,000,478	6,926,230

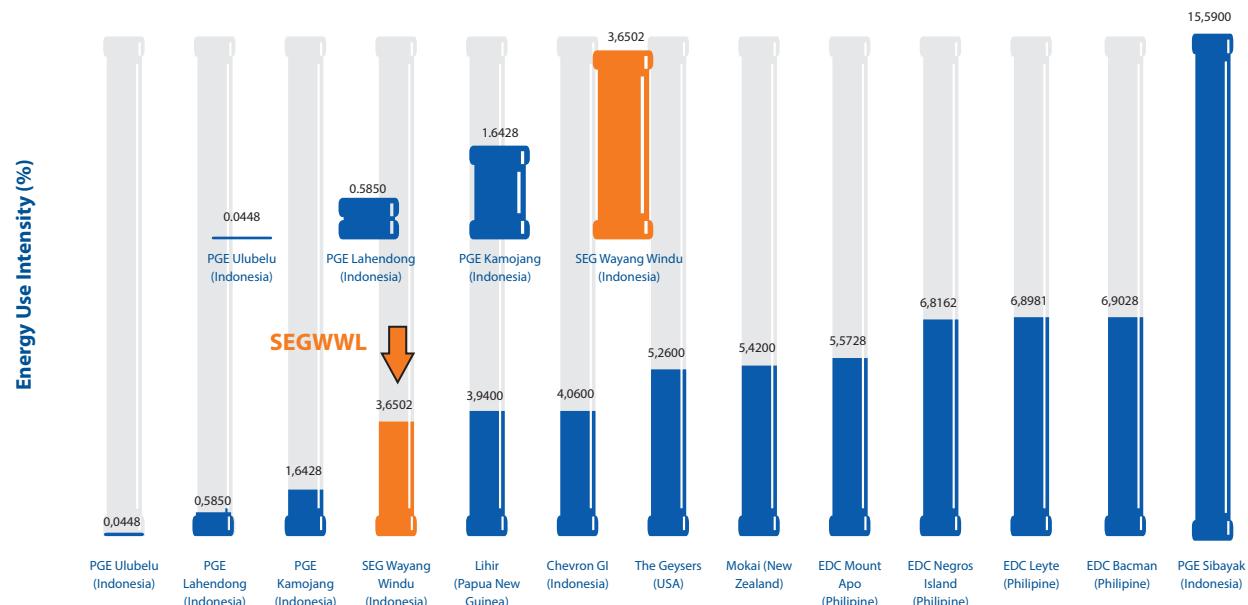
The energy efficiency and energy usage reduction policies have also resulted in fairly efficient power consumption in all supporting buildings, according to the results of the calculation of the Energy Consumption Intensity (ECI) standard for air-conditioned rooms. The last calculation record shows that the ECI for Administration Building was 4.57 KwH/m<sup>2</sup>/month. Referring to the following table, the use of power energy in offices and housing areas was categorized as very efficient.

Criteria	Air-Conditioned Room (KWh/m <sup>2</sup> /month)	Non-Air-Conditioned Room (KWh/m <sup>2</sup> /month)
Very Efficient	4.17 - 7.92	0.84 - 1.67
Efficient	7.92 - 12.08	1.67 - 2.5
Fairly Efficient	12.08 - 14.58	-
Slightly Wasteful	14.58 - 19.17	-
Wasteful	19.17 - 23.75	2.5 - 3.34
Extremely Wasteful	23.75 - 37.75	3.34 - 4.17

Source: National Education Department of the Republic of Indonesia 2004

Based on Energy Efficiency Benchmark Report conducted by PT ITS Kemitraan in 2016, the Company's energy intensity compared with similar industries in Indonesia, in Asia, and globally, resulted in the Company being ranked the 4th among 13 similar companies in the world.

OCCUPATIONAL SAFETY AND HEALTH	DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS	SUPPORTING ECONOMIC DEVELOPMENT	QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE	GRI STANDARDS INDEX	CONGENIALITY WITH SUSTAINABLE DEVELOPMENT GOALS
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### Changes in LPG Usage and CO<sub>2</sub> Emissions [GRI 302-4]

There was a decrease in diesel consumption from 2015 to 2016 of 6,360 liters. This decrease was proportional compared with the decrease in 2016, due to the completion

of the re-instatement activities. To ensure optimum performance of the vehicles, in cooperation with the competent parties, we implemented the operational vehicle age restriction policy and the periodic emission testing to the vehicles that we used.

### Fuel Consumption and CO<sub>2</sub> Emission of Operational Vehicles [GRI 302-4, 305-1]

Keterangan	Satuan	Tahun					
		2011	2012	2013	2014	2015	2016
Used Diesel	000 Liter	139.6	120.31	119.84	120.53	133.32	126.96
Savings	000 Liter	-28.8	-19.3	-0.5	0.7	12.79	-6.36
Mileage	000 Km	1,048.40	1,055.10	991.9	1,007.8	1,090.40	1,046.55
CO <sub>2</sub> Emissions	Ton Ekuivalen	372.57	321	319.75	322.47	356.69	339.67

### TOTAL EMISSIONS, EMISSION INTENSITY, AND EMISSION REDUCTION

As a form of Wayang Windu's participation in the efforts to mitigate GHG emissions (especially CO<sub>2</sub> gas), we strive to reduce the amount of emissions through the implementation of various programs. We monitor the results of the program implementation by measuring the total intensity of emissions to the total electrical power generated. We have implemented the reduction efforts to all sources of emissions, namely the power generation system as the main emission resource, as well as emission sources from supporting activities, including: transportation, refrigeration facilities, and household facilities of office activities. We also intensified the CDM program that resulted in substantial emissions reductions as part of optimizing CO<sub>2</sub> emission reduction potential from PLTP.

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT****Plant Emissions [GRI 305-1]**

As an eco-friendly power plant, PLTP only emits greenhouse gases (CO<sub>2</sub>) from NCG (Non Condensable Gas) contained in steam from the generation process. To minimize the formation of NCGs, we strive to prevent excess steam supply in the steam distribution pipeline system from production wells. The method is to apply the "Integrated Control" with zero venting concept during normal operation. The excess steam from the fluctuation in the source (from the well or plant output) was arranged through the auto-trimming valve system, so that there was no excess steam supply resulting in steam venting.

Minimization of steam venting through the implementation of integrated Control on Units 1 and 2 can reduce the greenhouse gas emissions. Wayang Windu is the first geothermal power plant operator in the world to be using this system. The decline in electricity production, as previously described, and the rise in steam production as a result of the well intervention program generated emissions from power plants in 2016 amounting to 137.47 MT CO<sub>2</sub> (In 2015: 93,347.44 MT CO<sub>2</sub>).



## Clean Development Mechanism Monitoring Scheme

As mentioned earlier, to stimulate involvement of all parties around the world, the Kyoto Protocol has introduced 3 mechanisms of benefits for businesses that are able to make a real contribution to reducing emissions from their operations. One of them was the Clean Development Mechanism (CDM). Believing in the potential reduction of the PLTP in accordance with the requirements in the CDM, we have prepared to fulfill the requirements since the beginning of our operational period, through:

- Forming a well established organizational structure in accounting for and implementing the CDM mechanism
- Good quality control in data preparation
- Planned monitoring reports
- Measurement instruments that are accurate and calibrated periodically in accordance with the required standards
- Documentation and archives system planned
  - Well controlled documents
  - Management review and internal audit planned

After going through a series of stages, on 2 Desember 2010, the Executive Board of the United Nations Framework Convention on Climate Change (UN FCCC) approved PLTP Wayang Windu Unit 2's application to be a CDM project. The potential reduction that can be achieved from the CDM program at our PLTP's operations was 794,832 tons CO<sub>2</sub> year. Since that time we have been monitoring and calculating our GHG emission reduction and conducting an external audit by a third party accredited periodically by the UNFCCC.

As a result, by 31 December 2016, total certified emission reduction (CER) of PLTP WW-Unit 2 had reached 4,308,282 TCO<sub>2</sub>e CERs, and provided additional benefits to the company. Emissions that included in the calculation of the CERs are non-condensable gas (NCG) emissions and from fossil fuels burning emissions that are directly related to power plant operations. The basis that was used was the grid plant emissions coming from Java, Madura, and Bali.

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## Monitoring of Non-Condensable Gas Emissions (NGC)

In addition to the CERs projects under CDM scheme, we regularly monitor the emissions of cooling towers at Units 1 and 2 power plants to maintain and improve the performance. The monitoring takes place twice a year, involving independent and accredited third parties. The parameters measured include non-condensed gas emission levels such as CO<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, NO<sub>2</sub>, and SO<sub>2</sub>, which have all been measured to be substantially below the provisions of the quality standards established by the Government.

## Emission Reduction from Transportation Activities [GRI 305-1]

This program is carried out to mitigate CO<sub>2</sub> emissions from transportation activities. Our approach is to measure the efficiency of fuel consumption from transportation activities and calculate the CO<sub>2</sub> emissions equivalent generated based on commonly used standard formulas, which is based on chemical reaction occurring in the combustion process. There are two types of transportation activities that we manage, namely: first, direct transportation related to operational activities inside the field or public activities, and second, indirect transportation activities related to operational support activities. For direct transportation activities, we implement energy efficiency programs as described earlier:

- Installation of GPS in every operational vehicle and implementing the travel route setting procedures
- To reduce indirect transportation activities, we have intensified the use of information technology-based support infrastructure, namely video conference

The energy efficiency program in operational transportation activities in 2016 directly contributed emissions amounting to 339.67 tons CO<sub>2</sub> (2015: 356.69 tons CO<sub>2</sub>) and equivalent to 19.88 tons CO<sub>2</sub> (2015: 25.17 tons CO<sub>2</sub>) for public transport. Meanwhile from the implementation of video conference to reduce transportation activities we obtained emission reduction of 14.07 tons CO<sub>2</sub> equivalent in 2015 (2015: 15.11 tons CO<sub>2</sub>).

We also conduct emission and feasibility tests on all operational vehicles involving the local Transportation Department. This emissions test activity refers to the Regulation of the Minister of Environment No. 5/2006, on the Limit of Old Motor Vehicle Exhaust Emissions and EURO-2 standards regarding the performance of motor vehicles with environmentally friendly exhaust emissions. In addition, we also require all operational vehicles to conduct emissions and feasibility tests, conducted by the local Transportation Department.

## Other GHG Emission Sources

The efficiency of the use of power energy from the operational support activities, such as the replacement of LPG usage to a more environmentally friendly electricity on the operation of the dryer and stove, reached 23.88 MTCO<sub>2</sub> equivalent (25.37 tons CO<sub>2</sub> in 2015).

## Emission Reduction of Ozone Depleting Substances (ODS) [GRI 305-6]

We strive to reduce the ozone depleting substances (ODS) emissions by replacing Freon use on the more environmentally friendly R417A (HFC) air conditioning facility. This is in line with the Presidential Regulation No. 23/1992 regarding the Ratification of the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on the reduction of the use of materials that may degrade the ozone layer. This program had implications for improving energy efficiency, with savings of up to 20% or equivalent with electricity savings of 120 MWh per year, in addition to implications for CO<sub>2</sub> emissions reduction of 32.92 MT CO<sub>2</sub> per year.

We also monitor the emissions of the other potentially damaging ozone gases, such as NO<sub>x</sub> and SO<sub>x</sub> coming out of the main equipment in the PLTP power generation system. Periodic monitoring in the form of emission testing carried out regularly by the independent parties showed that during the reporting period, the amount of gas emissions was always under the Environmental Quality Standards as prescribed by the Local Government.

## COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT

Parameter	Quality Standard	Unit	Test Result
CO <sub>2</sub>	na	%	<1
H <sub>2</sub> S	BM:35 mg/Nm <sup>3</sup>	mg/Nm <sup>3</sup>	<5 s/d 0.43
NH <sub>3</sub>	BM:35 mg/Nm <sup>3</sup>	mg/Nm <sup>3</sup>	<0.1 s/d 0.3

Emission and Reduction of CO<sub>2</sub> Gas [GRI 305-1, 305-2, 305-3, 305-4, 305-5]

The implementation of environmental programs aimed at improving the quality of the environment while reducing greenhouse gas (GHG) emissions has generally brought positive results. We have succeeded in lowering CO<sub>2</sub> emissions from several scopes of activities, maximizing the CO<sub>2</sub> emission reduction through the CDM program, replacing fossil fuel sources with electricity for operational support, and managing CO<sub>2</sub> emission ratio (GHG emission intensity) on power generation in 2015 at a level considered relatively good, as shown in the following tables.

Wayang Windu's CO<sub>2</sub> Emissions

No.	Deskripsi	Unit	Year				
			2012	2013	2014	2015	2016
<b>1 Emissions from Production Processes</b>							
1.1	Generator Emissions	MTCO <sub>2</sub>	134,717	145,564	159,934	93,947	137,466
<b>2 Emissions from Supporting Facilities</b>							
2.1	Transportation	MTCO <sub>2</sub>	321.87	320.62	322.47	356.69	339.67
2.2	Waste Processors	TCO <sub>2</sub> e	25.41	20.25	6.94	0,9972	-47.27
2.3	Public Transportation	TCO <sub>2</sub> e	7.48	6.89	52.36	25.17	19.88
<b>Total Emissions from Supporting Facilities</b>		TCO <sub>2</sub> e	<b>355</b>	<b>348</b>	<b>382</b>	<b>382</b>	<b>312</b>
<b>Total Emission from Business Unit</b>		TCO <sub>2</sub> e	<b>135,072</b>	<b>145,911</b>	<b>160,315</b>	<b>94,329</b>	<b>137,778</b>

## Air Pollutants Reduction Program [GRI 305-4, 305-5]

No	Description						
1	Wayang Windu CDM Program	725,010	764,667	764,667	435,689	781,487	
2	Replacement of environmentally friendly LPG energy use on dryer and stove operations	25.67	21.19	22.38	25.37	23.88	
3	Replacement of Freon R22 to R417A	32.92	32.92	32.92	32.92	32.92	
4	Emission reduction from an environmentally friendly pump or genset program	337	1,719	2,539	2,539	1,574	
5	Fuel optimization of operational vehicles	322	321	322	357	340	
6	Minimizing the Use of Fuel with Video Conference	15.11	16.32	15.11	15.11	14.07	
7	Shuttle use optimization	799.13	799.13	799.13	799.13	799.13	
8	Optimization of geothermal energy as renewable power with the use of FRP in pipes					0.13	
<b>Absolute Total of Emission Reduction</b>		<b>726,542</b>	<b>767,575</b>	<b>768,398</b>	<b>439,458</b>	<b>784,271</b>	
<b>Total Generation Production</b>		<b>1,932,151</b>	<b>1,930,282</b>	<b>1,848,434</b>	<b>1,113,597</b>	<b>1,922,142</b>	
<b>Emission Intensity to Generation</b>		<b>0.070</b>	<b>0.076</b>	<b>0.087</b>	<b>0.085</b>	<b>0.072</b>	
<b>Ratio of Emission Reduction to Total Emission</b>		<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	

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**WATER [GRI 303-1, 303-3]**

We manage water use by maximizing the use of produced water and maintaining the usage of surface water at a minimum level. We measure our water utilization performance by calculating the intensity of water usage divided by the total power generated, as one of the parameters to measure our water management performance. We use water for three main activities, namely:

- Brine water and condensate injection into the earth through injection wells to ensure the quantity of water steam as the energy source to drive the PLTP turbines.
- Use of condensate water or brine water for drilling activities.
- Supporting operational activities, namely for domestic purposes (bathing, washing and toilet).

Injection of water into the earth uses brine water and condensate water, which is water produced from the operation of the steam field and PLTP. Condensate water is also used as solvent to make drilling mud and as a mix for cementing during the drilling operations. All of the produced water condensate can be reused, without the use of surface water in drilling operations. The total volume of reused condensate water in 2016 was 1,275,175 tons (2015: 264,988 tons), which means there was a saving of surface water usage of 1,010,186 tons in 2016.

**[GRI 303-1, 303-3]**

Domestic water use is supplied from shallow groundwater, with the volume in 2016 of 11.73 m<sup>3</sup>, decreased from 2015's total water use of 14,413 m<sup>3</sup>. Water supply for domestic use comes from surface and ground water (well water). Thus, the intensity of water usage divided by total generated electricity in 2016 was 0.0059 m<sup>3</sup>/MWh or equal to 5.9 liters/MWh.



Surface water collection and utilization is under strict supervision to meet domestic needs, as well as to ensure a well-balanced usage of shallow groundwater around the operational area.

We also run various campaigns to foster staff awareness in water conservation, such as: putting on reminder stickers, reparation of damaged faucets, advocating the use of buckets when washing operational vehicles, and so forth. Once treated, most of the water is reused for limited use. Some of the remainder, after being ensured to fulfill the quality standards, is sent back to the water body, Cisangkuy River.

Before sending the treated waste water back to the water body, which is Cisangkuy River, we perform domestic waste water treatment process at the sewage treatment plant (STP) in accordance with the provisions of the Decree of the Regent of Bandung No. 666/Kep.005/IPBL/BPMP-2015. Water processing aims to eliminate or minimize the presence of substances that are harmful to the environment, to meet the approved quality standards, in cooperation with experienced independent parties. **[GRI 306-1]**

**COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT**

We have undertaken conservation measures for water originating from natural cycles, among others by building water absorption facilities to absorb rainwater, in the form of water absorption holes, since 2009. This program is in accordance with the Regulation of the Minister of Environment No. 12/2009 on Rainwater Utilization. By 2016, the number of water absorption holes we have built reached 100 units (2015: 100 units). The estimated amount of rainwater stored through the water absorption holes in 2016 was 1.3 m<sup>3</sup>/day (2014: 1.3 m<sup>3</sup>/day). We also build absorption wells. The total absorption wells for rainwater absorption from employee housing and administrative offices are currently 5 units.

In addition, we build rainwater and water condensate reservoir pond for condensation water obtained from the cooling system for the Administration Building and operator room. The water is then used for washing the vehicles, which we use again as recycled water. Water utilization from this pond is predicted to be around 225 m<sup>3</sup>/month. The program is implemented to reduce the usage of surface water for domestic use. This water conservation program is directed to increase the volume of rainwater that can be stored in the future, thus ensuring the sustainability of PLTP operations.

Another water conservation effort is the utilization of condensate water from air conditioners (AC) in the Power Station for car washing. Car washing activity uses water from reservoir ponds, where one of the water sources comes from the condensate water of the air conditioners installed at the Power Station. The amount of AC condensate water was 171.74 m<sup>3</sup>/year or equivalent to washing as many as 858 cars/year. Total AC condensate water produced from 2012 – June 2016 was able to save water usage by 858.68 m<sup>3</sup>.

**WASTE MANAGEMENT [GRI 306-2]**

We emphasize two waste management approach, namely: First, we apply the principle of 3R (Reduce waste, Re-use and Recycle) and safety disposal. Second, we separate the type of waste into two major groups, namely hazardous and toxic waste (B3) and non-B3 waste. In waste management, we have a special procedure called Waste Management

(EPE.WM), which regulates waste management under the principle of 3R mentioned above, and waste management (waste monitoring, waste sorting, transport to temporary storage area (TPS) and transport to final storage area (TPA)).

Based on its physical state, we process two types of waste, namely solid waste and liquid waste. Then according to the nature of its impacts, we classify waste into B3 and non-B3 waste. In managing waste, we always prioritize the Reduce principle, through improved operational efficiency. The example of such implementation is the ordering of caustic soda using bulk system and e-waste reduction using all-in-one PC. By 2016, the reduction of hazardous waste from caustic soda packaging had amounted to 6.3 tons.

**E-Document Application to Reduce Paper Wastes**

Administrative activities of the Company in general still uses paper forms that must be filled manually. These papers will not be reused, so they become waste. In order to reduce paper waste, we have initiated the E-Doc application for various needs, namely:

- FRACAS, which is used as an online reporting system for reporting K3LL and Work Permit.
- BPM application used by HR department for personal form filling such as pay slip, leave application, travel order, etc.
- Protag Online Application for online power transaction processing.
- Data logger for operator reporting program. Total paper savings from the use of the application in 2016 was 8.40 kg.



### Hazardous (B3 Waste) Management

In treating hazardous waste, we have implemented standard operating procedures that is in accordance with applicable legislations, namely:

- Managing licensed temporary storage place hazardous waste, based on BPMP Decree on behalf of the Regent of Bandung No. 658.31/04/V/DPMPTSP.
- Equipping packaging requirements of B3 waste with symbols and labels in accordance with applicable regulations.
- Reporting B3 waste management once every three months to the Ministry of Environment and submits a copy to the Regional Environmental Management

Agency (BPLHD) of West Java Province, BPLHD Bandung Regency and PPLH Java.

Large quantities of B3 waste from the operational processes come in the form of used oil from the turbine gearbox. Since 2009, we have strived to minimize the volume of used oil waste through the application of oil analysis program, i.e. the changing of oil under operational conditions, not based on the recommended changing schedule according to the equipment's specifications. This program resulted in a substantial reduction in the volume of waste oil, amounting to 2,656 liters of oil since the program was launched in 2009.

## COMMITMENT TO PRESERVING AND IMPROVING THE QUALITY OF THE ENVIRONMENT

**Management and Treatment of Non-B3 Waste**

Wayang Windu produces non-B3 waste from operational and maintenance activities of the steam field and PLTP, office operation, warehouse, clinic, garden areas around the offices, as well as employee housing and domestic activities. The consistent implementation of the Reduce and Recycle principles resulted in the amount of non-B3 waste produced in 2016 of 3.81 tons (2015: 13.23 tons), or 47.75 kg per month (2015: 1,102 kg per month), with the average recycled amount estimated at 100.54% (2014: 76.8%). The majority of non-B3 solid waste is organic waste, amounting to 9,600 kg or 800 kg/month, further processed

as compost. The non-B3 waste reutilization program in the form of utilizing used fan blades was initiated in 2016. Fan Blade is a material part of the construction of NCG air booster fan from the cooling tower chimney. Fan blade waste is managed in cooperation with Putra Putri Mandiri Waste Bank to be further processed. Fan blade is used as a gate at the village or alley. A total of 700 kg of fan blade waste has been used by the local community. The rest of the non-B3 waste, i.e. paper and plastic waste, is managed in collaboration with TBM Kertamanah and the local Department of Sanitation.

**Utilization and Reduction of Solid, Non-B3 Waste**

Description	Year					Unit
	2012	2013	2014	2015	2016	
<b>A. Utilization</b>						
Utilization of Organic Household Waste for Liquid Fertilizer and Compost	7.425	5.967	3.831	0.588	0.114	Ton
Utilization of Garden Waste for Compost	9.6	9.6	9.600	9.600	9.600	Ton
Cooperation for Utilization of Waste with TBM Kertamanah	-	-	0.426	0.196	0.289	Ton
Cooperation for Utilization of Fill Drift with Waste Bank	-	-	-	-	32.140	Ton
<b>B. Reduction</b>						
Reduction of paper waste through the FRACAS Online Program	-	-	0.077	0.180	0.092	Ton
Reduction of paper waste through the BPM Online Program	-	-	0.038	0.061	0.073	Ton
Reduction of paper waste through the Data Logger Program for Operators	-	-	0.008	0.008	0.008	Ton
Use of Food Containers for Security Staff & Contractors' Food	-	1.92	1.918	1.887	3.653	Ton
Reduction of paper waste through Online PLN Minutes Transaction	-	-	-	0.030	0.030	Ton
<b>Total 3R of Solid, Non-B3 Waste</b>	<b>17.025</b>	<b>17.485</b>	<b>15.897</b>	<b>12.552</b>	<b>46.000</b>	Ton

## » Cooperation for Non-B3 Waste Management with Taman Bacaan Masyarakat (TBM) Kertamanah

As part of education on environmental issues, while improving the welfare of the surrounding community, we pioneered the waste management program in the form of non-organic waste utilization, through a collaboration with TBM Kertamanah.

We do this by applying the learning method to read and count at the time of waste management. Participants

learn to read waste bank books and learn to calculate when weighing the trash. Total waste that has been utilized by TBM Kertamanah since 2016 is 622 kg. Collaboration on waste management has provided benefits for TBM Kertamanah, proceeds from the sale of paper can cover the waste bank's operational expenses and be used to run programs such as TBM's literacy programs.

**TOTAL ALLOCATION OF FUNDS**

As a commitment to improving the quality of the environment, we provide funding for the implementation of environmental protection and conservation activities. These environmental expenditures are incorporated into the allocation of funds for Occupational Safety, Health and Environmental (K3L) activities. The total environmental cost for the 2016 operational year was US\$85,191 (2015: US\$163,000).

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The various programs we have undertaken to manage, maintain and improve the conditions of the surrounding environment have succeeded in fostering trust from various parties, local communities and especially the regulator as the key stakeholders. Therefore, during the reporting year of 2016 we did not receive any fines or violated any laws related to violations of environmental laws and regulations.

[GRI 307-1]

## AWARDS

As a company operating in the field of geothermal energy, Star Energy Geothermal (Wayang Windu) Ltd (SEGWWL), has voluntarily participated in the PROPER program since the 2004/2005 assessment year until now. During this period, the achievements of SEGWWL in the PROPER program include: one time Blue rating, 7 (seven) times Green rating and 4 (four) times Gold rating, with one of them as PROPER's first Gold rating achiever.

As a company which has achieved the first PROPER Gold rating, SEGWWL shall continue its commitment in the implementation of various programs of Environmental Protection and Community Empowerment.

In 2016, based on the Decree of the Minister of Environment & Forestry of the Republic of Indonesia No. SK.892/Menlhk/Setjen/STD.0/12/2016, Star Energy Geothermal (Wayang Windu) Ltd once again achieved the Gold rating for the fourth time, together with 11 (eleven) other companies engaged in Oil and Gas, Energy, Mining and Pharmaceuticals. This highest PROPER achievement in 2016 was thanks to Wayang Windu (WW) PROPER team's determination to bring the trophy back after failing to achieve the award in 2014/2015 assessment year.

Some of the technical advantages and successful implementation of the Environmental Protection and Community Empowerment program were able to convince the PROPER Board to confer the Gold rating to Wayang Windu. Technical and managerial superiority, and the success of Environmental Protection and Community Empowerment program in 2015/2016 succeeded in delivering WW once again to achieve the highest awards in:



**Technical Excellence:** The first geothermal power plant in Indonesia to implement Integrated Control System with the concept of zero venting; The first geothermal power plant in Indonesia to install real time monitoring of the discharge of emissions; The first geothermal power plant in Indonesia that uses condensate water for the drilling process.

**Management Excellence:** Implementing an "Integrated Management System": ISO 14001, ISO 9001, OHSAS 18001, ISO 50001, ISO 55001, ISO/IEC 17025 & SMK3 applied in the WIMS (Wayang Windu Integrated Management System); Success of sustainable economic development programs through the implementation of quadruple-helix concept.

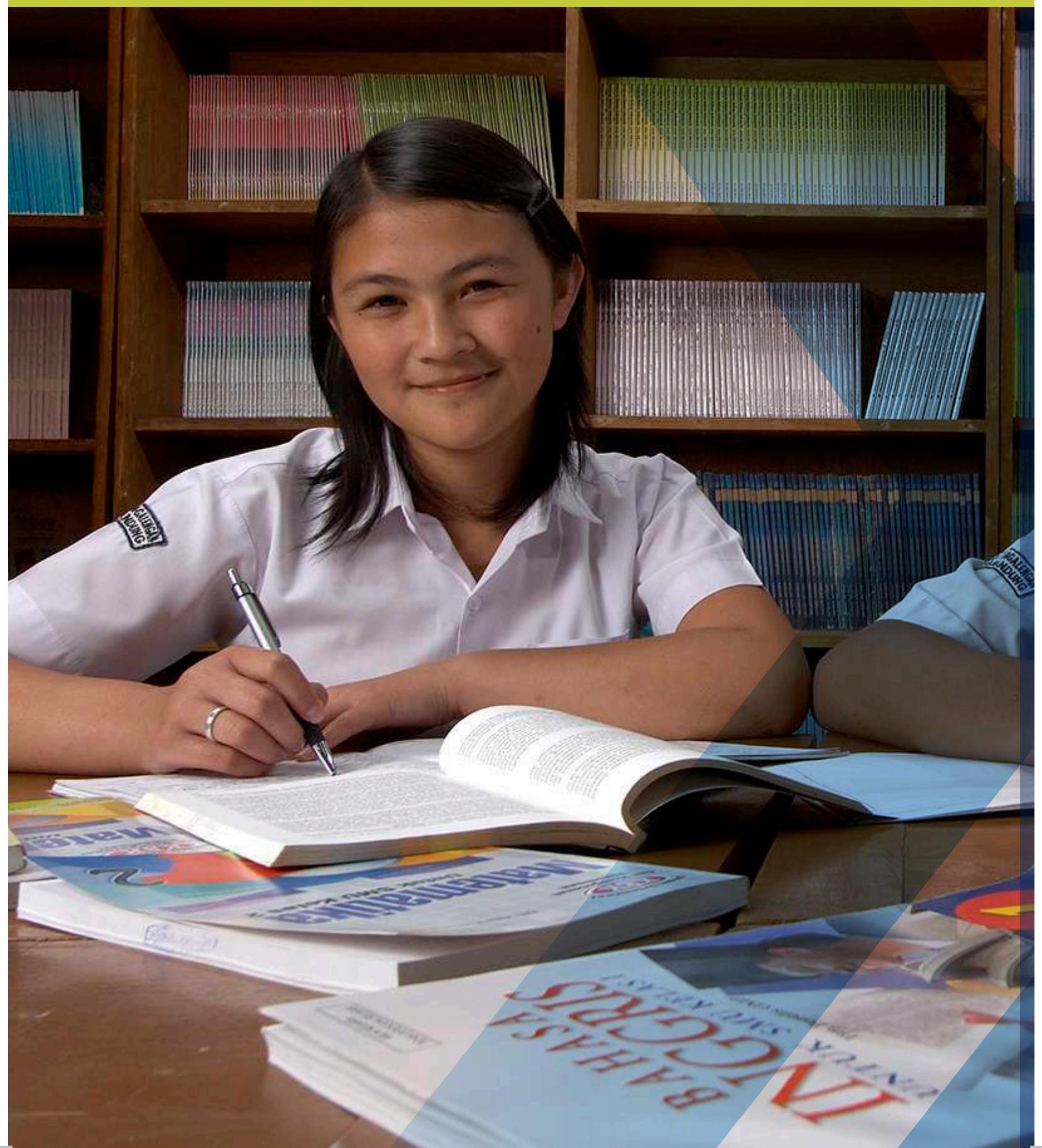
**Environmental Protection and Community Empowerment** Programs included WIP (Well Intervention Program); Sulfur Control Program in Cooling Water System; Utilization of AC Condensate Water at the Power Station for car wash; Green Economy Program (Three-in-One Coffee Activity - Margamulya Village Cooperative) and Rumah Pintar Operations through its programs.

The spirit of our success in PROPER in the 2015/2016 assessment year was part of the support and commitment of Star Energy Management that has consistently been striving to foster a harmonious balance between the operation of Wayang Windu, the environment, and the surrounding communities. We believe this commitment shall be maintained, and we congratulate the SEGWWL PROPER team for the success achieved.

[SUMMARY OF KEY  
ACHIEVEMENTS](#)[WELCOME NOTE FROM  
THE PRESIDENT & CEO](#)[OUR PROFILE](#)[ABOUT  
THIS REPORT](#)

COMMITMENT TO  
PRESERVING AND  
IMPROVING THE  
QUALITY OF THE  
ENVIRONMENT

## BUILDING THE WAYANG WINDU COMMUNITIES



OCCUPATIONAL  
SAFETY  
AND  
HEALTHDEVELOPING  
GLOBAL-INSIGHTED  
WAYANG WINDU  
PERSONNELSSUPPORTING  
ECONOMIC  
DEVELOPMENTQUALITY  
DEVELOPMENT FOR  
SUSTAINABILITY  
GOVERNANCEGRI STANDARDS  
INDEXCONGENIALITY  
WITH SUSTAINABLE  
DEVELOPMENT GOALS

# BUILDING THE WAYANG WINDU COMMUNITIES

"Through the Corporate Responsibility Programs based on the four pillars of Education, Economy, Health, and Infrastructure, we support all efforts to improve the welfare of communities in the areas surrounding our operational zone. In line with the vision of national development and the global sustainable development goals (SDGs)."

## BACKGROUND AND OBJECTIVES

One of the significant changes in the business world in the era of globalization is the emergence of the concept of corporate citizenship, the corporation as "member" of the society have its rights and obligations. The corporation's rights as a citizen of the community are to economic-oriented activities as part of the daily activities. While its obligation is to participate in achieving the goal of sustainable development, that is, to achieve social welfare and improve the quality of life of the surrounding communities through Corporate Social Responsibility (CSR) activities. CSR is a manifestation of corporate awareness through the allocation of profit for the benefit of human and environmental development sustainably based on proper and professional procedures.

In Indonesia, the Government has required the implementation of social and environmental responsibility activities for every company that operates in the field of and/or related to natural resources through Law No. 40/2007 on Limited Liability Companies (Article 74 paragraph 1), and has set the sanctions for those who neglect their obligations.

Wayang Windu had implemented CSR activities, even before this law was enacted. We see CSR activities as an investment, the goal is a sustainable benefit for all stakeholders, not only profit. Through CSR, we demonstrate corporate social responsibilities to achieve social welfare for the surrounding communities, in line with the progress of the Company's business.

We emphasize development activities, community development and empowerment in the implementation of our CSR activities, in accordance with some of the goals of the Sustainable Development Goals (SDGs), such as:

- Goal 1 - No Poverty - End poverty in all its forms everywhere;
- Goal 3 - Good Health and Well-being - Ensure healthy lives and promote well-being for all at all ages;
- Goal 4 - Quality Education - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
- Goal 10: Reduce Inequalities: reduce income inequality within and among countries.

In other words, we implement CSR programs as a means of contributing to the improvement of social, education, economy, health, environment, and the surrounding communities' conditions.

**We see **CSR** activities as an investment,  
the goal is a sustainable **benefit for all**  
**stakeholders**, not only **profit**.**

OCCUPATIONAL SAFETY AND HEALTH	DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS	SUPPORTING ECONOMIC DEVELOPMENT	QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE	GRI STANDARDS INDEX	CONGENIALITY WITH SUSTAINABLE DEVELOPMENT GOALS
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To measure the success of the community's potential development program, we closely monitor the development parameters issued by the Central Bureau of Statistics (BPS), the Human Development Index (HDI, or IPM in Indonesian) released each year, in addition to using internal evaluation mechanisms. Our overall evaluation results is used as a management tool to improve the effectiveness and sustainability based on indicators that have been developed as well as feedback in designing advanced programs.

These evaluations are linked with a variety of indicators as a well-prepared measurement tool that includes; input, process, output, outcome, and the benefits and impacts.

The HDI of Pangalengan Subdistrict (76.41) has been able to track the value of general HDI in Bandung Regency (7.45), based on the data from the BPS report in 2016. We aim for Pangalengan Subdistrict to be the most advanced, prosperous, and has the highest quality of life of the community. This desire is realized by organizing CSR programs that are expected to encourage and accelerate the process of progress and development of community welfare.

Furthermore, in order to ensure the accuracy and success of the program, we involve the parties concerned, including the public and local community leaders, local government, non-governmental organizations and other independent parties starting from the planning, implementation and evaluation phases of the implemented programs.



**BUILDING THE WAYANG WINDU COMMUNITIES****SEGWWL CSR POLICY**

To ensure an effective and successful implementation of our corporate social responsibility programs, at every stage of the planning and implementation of the programs, we are guided by SEGWWL CSR general implementation policy and CST Program Implementation Guidelines, as follows:

- SEGWWL is committed to fulfilling its social awareness role with full responsibility and sustainability by emphasizing great contribution in achieving balanced value for all stakeholders.
- SEGWWL pledges to focus on improving social and economic aspects and maintain a harmonious relationship for the creation of a sustainable positive impact for the communities surrounding the operational area, through CSR programs which in practice are always grounded on the Guidelines.
- SEGWWL applies the ethics of Good Corporate Governance and strives to ensure that the operational activities are conducted in line with the standards and the legal, ethical, and professionalism we always uphold. Everything SEGWWL does in its operational activities, is always performed with total honesty and with strong integrity.

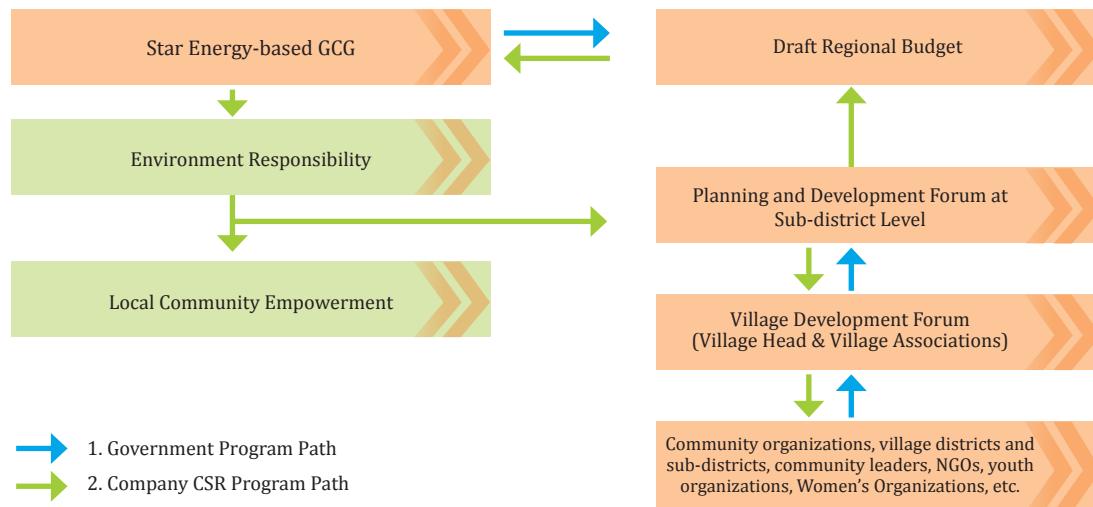
- SEGWWL is committed to building and maintaining sincere and fair relationships with government agencies, community leaders, co-workers, mass organizations, and other relevant parties.
- SEGWWL will not tolerate any unethical acts committed by co-workers, government agencies or public figures who violate any applicable regulations on corruption in Indonesia, unless such action has been ratified by written rules or statutory provisions.

**PREPARATION OF CSR PROGRAMS**

[GRI 413-1]

To optimize the successful implementation of our programs, we conduct periodic social mapping to understand the needs and obtain the right programs. We adopt the Quadruple Helix as an approach to model the CSR Program, namely the Company that constantly ensures community involvement as the subject of the programs, in cooperation with the Government and educational institutions.

Through this cooperation, we expect to obtain a community potential development program design that can take into account all possible successes and failures, and can anticipate the corrective measures. Thus, the community can optimally benefit from the results of the programs.

**STAKEHOLDER INVOLVEMENT**

For 2016, we designed our CSR programs by dividing them into four categories: education, economic and people's purchasing power development, public health, and social and public infrastructure development, which we illustrate in the following chart:



The increase in Pangalengan Subdistrict's HDI is used as a reference in measuring the success of our CSR programs. Basically, these programs are intended for community empowerment and development. Every year this community development fund continues to increase, as we ramp up the quantity and quality of programs to be implemented. For 2016, we budgeted approximately Rp4.6 billion, with details of the allocation as follows:

#### CSR – 2016 Activities Funding Allocation

Programs	Amount (Rp Million)
Humanitarian Donation	1,035.2
Infrastructure	1,436.5
Empowerment	1,725.9
Capacity Building	400.0
<b>Total</b>	<b>4,597.6</b>

Our community empowerment programs aim to:

- Assist and support the government's programs, particularly in improving HDI with an emphasis on implementation of activities in the following areas:

**BUILDING THE WAYANG WINDU COMMUNITIES**

- Education,
- Community Empowerment and Economic Improvement,
- Improvement of General and Social Infrastructure Facilities, and
- Health and Environment.
- Establish and maintain good communication and relationships with the communities, community leaders, religious leaders, government, and related institutions.
- Improve and promote the level of community life in both economic and health terms.
- Reduce poverty and unemployment rates in the communities surrounding the operational areas.
- Improve access to quality education, especially for children and teenagers.
- Improve spirituality/religiosity by building and maintaining religious facilities.
- Build infrastructure to improve the quality of life.

In this case, we decided that Education will be our main program, considering the educational program has the highest weight in measuring the HDI index. There are two indicators that are used as references of HDI Education measurement, namely: 1) the level of community participation in education compared to the number of school-age children; 2) literacy numbers this is limited to people aged 15 years and over who can read and write. The summary of the Company CSR work programs in 2016 is as follows.

**2016 CSR Work Program Summary**

Area	Goals	Program
EDUCATION	<ol style="list-style-type: none"> <li>1. Improve the quality of education services in Pangalengan Subdistrict</li> <li>2. Expand community opportunities in having education services in Pangalengan Subdistrict</li> <li>3. Support informal education institutions</li> </ol>	<p>Formal</p> <ul style="list-style-type: none"> <li>• Scholarships for outstanding students at elementary, junior high, and high school levels</li> <li>• Scholarships for pre-KS students at elementary, junior and senior high schools</li> <li>• 3 years full scholarship of DIII education</li> </ul> <p>Nonformal</p> <ul style="list-style-type: none"> <li>• Package C Education Services for Pangalengan residents who leave school and junior high school graduates</li> <li>• Reading Classes for community groups aged 15 and older</li> <li>• Saba Village Green Economy TBM: hydroponic farming</li> </ul>
COMMUNITY HEALTH	<ol style="list-style-type: none"> <li>1. Improve the quality of life of Pangalengan people</li> <li>2. Accelerate the success of government programs in establishing Desa Siaga in Pangalengan Subdistrict</li> <li>3. Increase public awareness of Healthy Living Patterns</li> </ol>	<ul style="list-style-type: none"> <li>• Disaster-Resilient Community (MTB): Disaster Awareness and Emergency Counseling and training/ SAR for Desa Siaga cadres &amp; RW leaders at Pangalengan Subdistrict</li> <li>• Posyandu revitalization: Posyandu construction and donation of basic medical equipment for basic health services.</li> <li>• Posyandu Revitalization: donation of milk and nutritious food for pregnant women and children younger than five years old.</li> </ul>
ECONOMY	<ol style="list-style-type: none"> <li>1. Increase the income level of Pangalengan communities</li> <li>2. Foster the economy of the informal sector</li> <li>3. Encourage SMEs to be able to develop themselves</li> </ol>	<ul style="list-style-type: none"> <li>• Strengthen the Nurkayana Cooperative as a Business Institution: Promoting Kopi Gunung Tilu</li> <li>• Preparation of tourism networking business unit: <ul style="list-style-type: none"> <li>1. Prepare strategic planning for Nurkayana business unit in the field of tourism.</li> <li>2. Cooperate early with the current tourism manager.</li> <li>3. Introductory information for tourists related to tourism sites in Pangalengan.</li> </ul> </li> </ul>
SOCIAL/ GENERAL FACILITIES	<ol style="list-style-type: none"> <li>1. Improve the quality of infrastructure of public facilities and social facilities in 13 villages in Pangalengan Subdistrict</li> <li>2. Ensuring equal distribution of road access for the entire area of Pangalengan Subdistrict</li> </ol>	Renovations (roads, public buildings, drainage, sports facilities, etc.) in 13 villages equally and simultaneously



## Community Forum of Village Development and Community Forum of Development Planning as Tools of Social and Stakeholder Engagement [GRI 413-1]

One of the keys to the successful implementation of community development programs is the active involvement of the community as the beneficiaries of the program. They should not only be the goal of the program, but also be the owners of the program, or in that respect, the subject of the program. Therefore, in designing and implementing all of the community development programs through Corporate Social Responsibility (CSR), we seek to involve the community participation through the Forum Group Discussion (FGD) or popularly known as Musrenbang (Community Forum of Development Planning).

Musrenbang is a discussion forum of the parties involved in formulating CSR program trajectories that are directly related to the needs of the surrounding community. This forum involves community participation, village administration, subdistrict, other regional government elements, NGOs, and representatives of the Company. The agenda of the discussion is the determination of

CSR programs outside of the physical development activities which funded by the government through the village aid funds or other government development schemes in the area.

In relation to the existing government's development scheme, we can adjust and allocate participatory funding/program to support the development of village or sub-district infrastructure and other community development programs. The proposed program comes from the community and/or NGOs, community leaders, and elements of the village/subdistrict management, so the mutual agreement can be achieved to benefit all parties involved. Once the proposed program is approved, a small committee will be formed to determine the technical implementation of the program, including overseeing and evaluating the results of the program's implementation.

The evaluation results of future programs will be discussed during the Musrenbang forum for the next period. The whole series of Musrenbang execution will result in an engagement in which the community will be actively involved. Thus the effect of such involvement will have an impact on the growing participation of the community as the direct beneficiaries of the programs. Other stakeholders are also expected to be directly involved in each running program.

In 2016, the Musrenbang was held in March 2016 involving 13 head of villages around the Wayang Windu Project Area as well as the local government.



Stakeholder gathering involving 13 village heads and local government agencies

**BUILDING THE WAYANG WINDU COMMUNITIES****2016 CSR PROGRAM IMPLEMENTATION [GRI 203-1]****EDUCATION PROGRAMS**

BPS data from 2015 showed that the education level among inhabitants in 6 villages in Pangalengan Subdistrict was still dominated by graduates of primary and secondary schools, both in junior and senior high. The low level of education in Pangalengan Subdistrict is a legitimate cause for concern, considering this would impact directly on the human resources quality.

Given this condition, we are committed to overcoming the "poverty circle" syndrome, in which poorer communities cannot access higher education—which is relatively more expensive—to improve their competence, which in turn causes their limited income and leads to rooted poverty among the low class society. Therefore, we design and implement educational programs to provide greater opportunities for the disadvantaged to obtain quality education.

Since 2013 until present, we have been preparing and implementing non-formal education programs as actual measures to actively participate and contribute to improving the quality of community life, in addition to formal education.

The purposes of Wayang Windu's CSR programs in education are as follows:

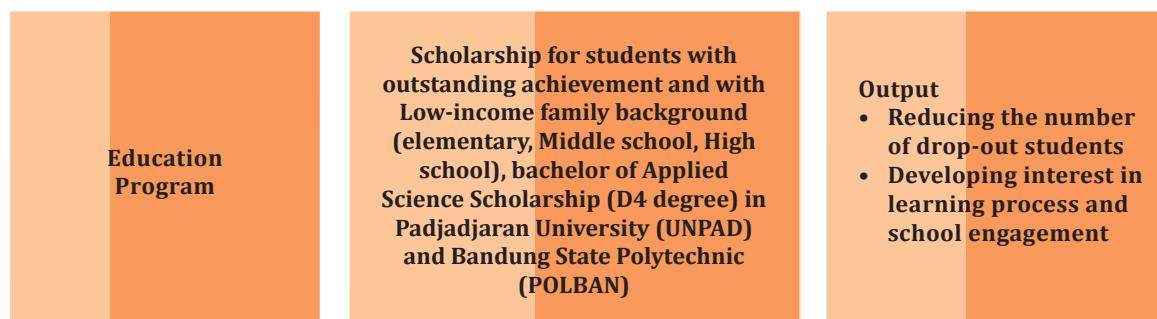
1. To enhance opportunities for the communities in education sector
2. To improve the quality of education services in Pangalengan Subdistrict

The education programs are divided into two major groups, namely:

- Formal education
  - Scholarships for excellent students
  - Scholarships for economically-challenged but excellent students
  - Provision of scholarships
- Non-formal education
  - "Rumah Pintar" program implementation for Pangalengan citizens
  - Supporting assistance for Taman Baca Masyarakat and similar organizations in Rancamanyar and Padamukti

**Initiatives and Implementation of Formal Education Programs**

The goal of the formal education programs is illustrated in the following chart.



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As planned, in 2016, we provided scholarships to 1,604 students at all educational levels, ranging from elementary, junior high, high school/vocational school, to university (diploma). Through these scholarships, we wish that the beneficiaries (especially Pre-KS scholarships) be willing and able to continue their education to a higher level, for their own welfare in the future.

#### **Scholarship Recipients Recapitulation**

Education Level	Excellent Students	Economically-Challenged & Excellent Students	Total
Elementary School	680	350	1,030
Junior High School	153	153	306
Senior High School	90	90	180
Diploma III - Polban & UNPAD	88		88
Total			1,604

#### **Initiatives and Implementation of Non-formal Education Programs**

Since 2013 until present, we have been eyeing non-formal education as part of our CSR programs. These programs are considered to have a significant advantage in maintaining and preserving the socio-cultural values and local wisdom. There are two activities that we have carried out. First, partnering with Taruna Karya Setia Bhakti Desa Margamukti, which has been running the Taman Baca Masyarakat (TBM) Saba Desa aimed at eradicating illiteracy in unique and creative ways. The TBM has been directed to become part of our green economy program.

Secondly, building and developing Rumah Pintar Pangalengan as a non-formal education service center or employment training service that can be accessed by all of Pangalengan citizens. In the future, this "Rumah Pintar" is expected to become a local institution that serves as a catalyst for improving public education in the non-formal education sector.

#### **Developing TBM Saba Desa as Part of the Green Economy Movement**

We are cooperating with Karang Taruna Setia Bhakti Desa Margamukti to develop TBM Saba Desa to be a green economy movement. The objectives of Saba Desa Green Economy are as follows:

1. To promote interest in reading and foster the culture of reading among the community by using their spare time to read in order to create a creative, dynamic, productive, and independent community
2. To educate the community to maintain and utilize the library's materials in a proper and effective manner
3. To reduce the illiteracy rate of school dropouts and mothers, especially in Kertamanah village
4. To build an environmentally-caring attitude and creating new economic activities

To achieve such goals, together with Wayang Windu, TBM Ekonomi Saba Desa has conducted the following activities:

1. Library service
2. Reading lesson through cooking activities for illiterate mothers
3. Waste Bank with functional literacy aspect for school dropouts
4. Hydroponic agriculture as an economic activity
5. Chayote and worm cultivation



## Accelerated Development and Green Economy Campaign by Taman Bacaan & Membaca (TBM) Saba Desa



**Waste Bank Program, at TBM Kertamanah**

worms required 1 kilogram of cow dung (1 small bucket) mixed every 2 days with organic waste as well as 2 liters of water. In 2 days, the worms would be capable of recycling 50 kilograms of cow dung and organic waste indirectly. In addition to its economic value, the worm cultivation program also brought an ecological value in the form of pollutant reduction for this method of self-sustained waste management, and it has successfully convinced the village residents to not throw away any garbage into the river. The remaining decomposition of organic waste generated from worm cultivation is used as source of organic fertilizer for chayote plants.

In 2016, TBM Saba Desa has rejuvenated the worm and chayote cultivation activities.

### Hydroponic Farming



### Illiteracy Class, Waste Bank, Hydroponic Farming, Worm Cultivation & Chayote Cultivation

The mission to eradicate illiteracy was conducted through reading class in TBM Saba Desa, which was a pioneering program of its kind in Bandung regency. This activity combined reading class with practice in waste management on a daily basis that had already been part of the existing activity in the Waste Bank program. In relation to this activity, the element of education to eradicate illiteracy was conducted when the customers of Waste Bank were asked to write the brands of junk in their saving books. Through this method, illiterate customers learned how to read and basic math in the form of addition and subtraction operations. For housewife participants, a special illiteracy-eradication activity was conducted by reading recipes. The success of TBM Kertamanah in eradicating illiteracy coupled with the green economic activity was an example of a brilliant reference in order to be applied in other villages around the project area.

### Cultivation of Worms & Chayote

In the worm cultivation program, to obtain 1 kilogram of



The hydroponics program has been initiated by TBM Kertamanah Saba Desa since 2014 and is still running until today. In 2016, the program continued with activities such as: upgrading existing hydroponic facilities, conducting basic hydroponic engineering training for all TBM members, and planting seeds of hydroponics plants. These hydroponic activities were conducted in order to educate the community to benefit from the existing land and avoid forest encroachment for plantation activities.

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DEVELOPMENT GOALS**Developing Inspiration from Rumah Pintar**

As part of its commitment to providing facilities and infrastructure for Rumah Pintar, in 2016 SEGWWL in collaboration with Pangalengan Education Authorities organized learning activities at Rumah Pintar, which involved:

- Kejar Paket C – 75 participants
- Kejar Paket B – 25 participants
- Sewing Training – 70 participants



Kejar Paket B is an equivalency test for junior high school education level or equivalent, to obtain the junior high school graduation certificate. Kejar Paket C is an equivalency test for senior high school education level or equivalent, to obtain the senior high school graduation certificate.

The target of this program is 17-44 years old citizens from 13 villages in the Pangalengan Subdistrict.

In addition to Kejar Paket B and C, Rumah Pintar also offers a sewing course. For the first class, there were about 20 participants from all villages, and they had received recommendation from their respective village heads.



## TESTIMONIALS FROM KEJAR B AND KEJAR C PROGRAM PARTICIPANTS



**Deti Damayanti**

Margamulya Village

Assalamu'alaikum Wr Wb,

For me, learning a skill is very important because with our skills we will be able to have competitive advantages over many people. Lots of training conducted by the government or other parties aimed to improve the capacity of the community; one of them through sewing training which I participated in. I am happy to participate the training organised by Nurkayana Union, hopefully this sewing knowledge can be useful especially for families and society.

Thank you Nurkayana, hopefully the cooperation becomes more successful in the years to come.



**Astri Citra Lesmana**

Pangalengan Village

This training gives me an extraordinary opportunity, there is rarely an opportunity like this. All facilities are provided free of charge, if there is a willingness to follow this activity. One may get expertise and additional knowledge from this. Hopefully it can serve as my path to become an entrepreneur.

Thank you Nurkayana and Star Energy, I hope this kind of activity will continue and I can come back again to deepen my sewing skills.



**Agus Rohmat**

Pangalengan Village

I am very pleased with the sewing training activities conducted by Nurkayana and Star Energy. This activity adds to my knowledge and friends alike be used for improving our lives in the future.

I hope that the training participants can be referred to some job vacancies according to their skills.

## Economic Programs

Starting in 2014, we have initiated a pilot project program as part of the integrated Corporate Social Responsibility (CSR) program, which is Wayang Windu CSR Synergy Toward Green Economy. Through this program, we would like to encourage the improvement of wellbeing and life quality of communities in Pangalengan through economic activities that pay attention to issues of healthy environment preservation, which is important for Pangalengan inhabitants in the future.

In this program, Nurkayana Cooperative, as one of the SME Cooperatives that we have established and mentored, has a central role as one of the key players in the integrated economic activities. In accordance with the purpose of its establishment, we encourage Koperasi Nurkayana to continue to share the knowledge gained from the entrepreneurship training to the MSME businesspeople in Pangalengan.



## UMKM Nurkayana Not Just An Ordinary Cooperative



UMKM Nurkayana development roadmap towards becoming a Center of Excellence in Entrepreneurship, Education & Green Tourism in Pangalengan Subdistrict.



Development of UMKM Nurkayana as a backbone for sustainable civil economic programs.

Our innovations in CSR programs remain focused on developing UMKM Nurkayana as the backbone of sustainable civil economic programs, which has spawned new economic & environmental institutions, such as TBM Saba Desa, Disaster-Resilient Community, and Margamulya Coffee Producers Cooperative (KPKM).

After the establishment of the commercial unit, in 2016 Nurkayana was in the process of building a tourism unit by harnessing the tourism potential in Pangalengan Subdistrict. Activities that have been done in the tourism sector include mapping, data collection, and consolidation of both tourism objects and businesses in Pangalengan. It is also in the process of consolidating with tourism managers to standardize its management.

Nurkayana created a synergy between managers of outdoor tourist attractions and invited them to develop a management standardization that can provide the best service, comfort, and adequate security in travelling.



Commercial Gallery, a form of promotion for local products under supervision by Nurkayana Cooperative.

 **SUCCESS STORY FROM NURKAYANA COOPERATIVE MEMBER**

**Iman Suryadi**  
Garment Business Owner  
Under Tower

Since 2011, Iman has received 4 revolving capital fund assistances from Nurkayana Cooperative. Three times were in the form of regular revolving capital fund, each amounting to Rp7 million, and once as a “bailout fund” when he had to produce 150 pieces of jacket within two weeks.

Before becoming a member of Nurkayana Cooperative, Iman Suryadi was a garment businessman that specialized in making jackets and T-shirts. His business was run alone with his child. If they were both overwhelmed with the orders, Iman will ask 2-3 tailors to do freelance work helping him. This happened because Iman had a limited capital, he could not afford to hire permanent employees.

After receiving revolving capital funds from Nurkayana, and attending entrepreneurship training and mentoring sessions, Iman ventured to hire two permanent employees to take care of production activities, while he spends more time to expand the market and improve his business’ cashflow.

Now Iman’s garment business has grown and has been able to hire 4 permanent employees, with 3 pieces of sewing machines, 1 embroidery machine, and 1 overdeck machine, capable of cutting fabric in large quantities. Besides working on jackets and T-shirts by order, Iman is already marketing his own brand name, Under Tower, whose products are sold under a consignment scheme.

Now, in 2016, Iman Suryadi is involved as a tutor as well as a provider of materials in basic sewing skills training, the result of collaboration between SEKWTL and Nurkayana Cooperative and Rumah Pintar Pangalengan.



## Blessing from Critical Land Rehabilitation



The community empowerment programs for the years 2015–2016 were also focused on development and management of coffee cultivation business as a 3-in-1 program, consisting of rehabilitation, maintenance of critical land, and change of perspective and behavior in agriculture and development of green economy. This program is an ongoing activity of UMKM Nurkayana development to become the backbone of sustainable civil economic programs in Pangalengan Subdistrict.

Since 2007, SEGWWL has provided 50,000 arabica coffee seeds and 150,000 kg of fertilizer for a 40-ha area to Margamulya Village Forest Community (LMDH) as part of the forest land rehabilitation program in the Pangalengan Subdistrict. After 9

years, LMDH Margamulya evolved to Margamulya Coffe Producers Cooperative (KPKM) and has become a large-scale coffee producer.

The area of natural forest maintained and developed became 142,25 Ha with the number of arabica coffee trees reaching 287,350 trees, which produced 261,500 kg per harvest on average, managed by 141 farmers. Regularly, the demand for coffee marketed under the brand Java Preanger Gunung Tilu comes from the domestic market as well as foreign countries, such as Japan and Korea. On a national scale, Java Preanger Gunung Tilu coffee is the only coffee of West Java origin selected as a supporting product for the national sports event PON XIX in West Java.

### Public Health Programs

Community Development in the Public Health Sector aims to:

1. Improve the infants' and nursing mothers' nutrition quality
2. Improve the quality of basic health services, especially in remote areas in Pangalengan Subdistrict
3. Expand basic health services
4. Accelerate the implementation of government programs in the establishment of Desa Siaga in Pangalengan Subdistrict
5. Encourage the creation of a social mechanism for responding to natural disasters

To achieve these objectives, we have implemented three main activities, through the Desa Siaga Strengthening and Development Programs, which are:

1. Strengthening of Masyarakat Tangguh Bencana (MTB) or Disaster-Resilient Community

The strengthening of the MTB was focused on the community to be able to assess disaster-prone points, to assess vulnerability, to be able to set up safe zones as the direction for evacuation, to be capable of independent evacuation prior to any external assistance. Due to the training started in 2014, during the landslide disaster in 2015, MTB was able to provide a more focused and organized response. In 2016, we increased the program's intensity by disseminating MTB to 98 inhabitants of 13 villages in Pangalengan Subdistrict.

2. Posyandu (Public Health Center) Revitalization

The Posyandu Revitalization Program was essentially providing public health center services to be easily accessible for the people. Our priority was to provide public health centers in remote areas with minimal public transportation. With the availability of accessible public health centers, the people will be able to raise their awareness for ensuring the health of infants and nursing mothers.

3. Donation Milk and Highly Nutritious Foods for Pregnant Mothers and Toddlers

This activity was implemented in order to reduce mortality rate and malnutrition among toddlers in Pangalengan Subdistrict.

### Infrastructure Improvement Programs

The objectives of the programs are as follows:

1. To improve the quality of infrastructure, public facilities and social facilities in 13 villages in Pangalengan Subdistrict
2. To ensure even distribution of road access in all areas in Pangalengan Subdistrict

Initially, in 2009, we focused on improving and renovating social facilities destroyed by the earthquake. Since 2013 until present, we have initiated a Kolaborasi Swakelola (Self-Managed Collaboration) program with 13 villages in Pangalengan to carry out renovation and/or rehabilitation of public facilities.

The selection and implementation the objects for renovation and rehabilitation is determined through Musrenbang and Musrenbangdes mechanisms.

In 2016, we accomplished 13 renovation programs for various public facilities in 13 villages in Pangalengan Subdistrict, with a total fund amounting to Rp1,436.5 million.

### Additional Activities

In addition to the above four sectors as part of Wayang Windu's community development and empowerment programs, we also accomplished various additional activities in order to support the improvement of public welfare, including:

1. Relocation of Cibitung landslide disaster victims

We supported the construction of 8 units of houses for the victims who lost their homes due to landslide that occurred in mid-2015. The construction of the relocated houses was carried out based on RAB and design from the Department of Housing, Land Planning, and Sanitation of the Regency of Bandung.



2. Supporting Chayote and Worm Cultivation Activities

We continue the cultivation of chayote and worms in the land belonging to the Taruna Karya Setia Bhakti secretariat, covering an area of 420 m<sup>2</sup>. The harvest resulting from both activities translated to an economic value of Rp7.2 million, for each harvest.

3. Basic Level Sewing Skill Training

In cooperation with Nurkayana Cooperative and Rumah Pintar Pangalengan, we organized basic sewing skill course for Pangalengan residents. The goals of the course are to:

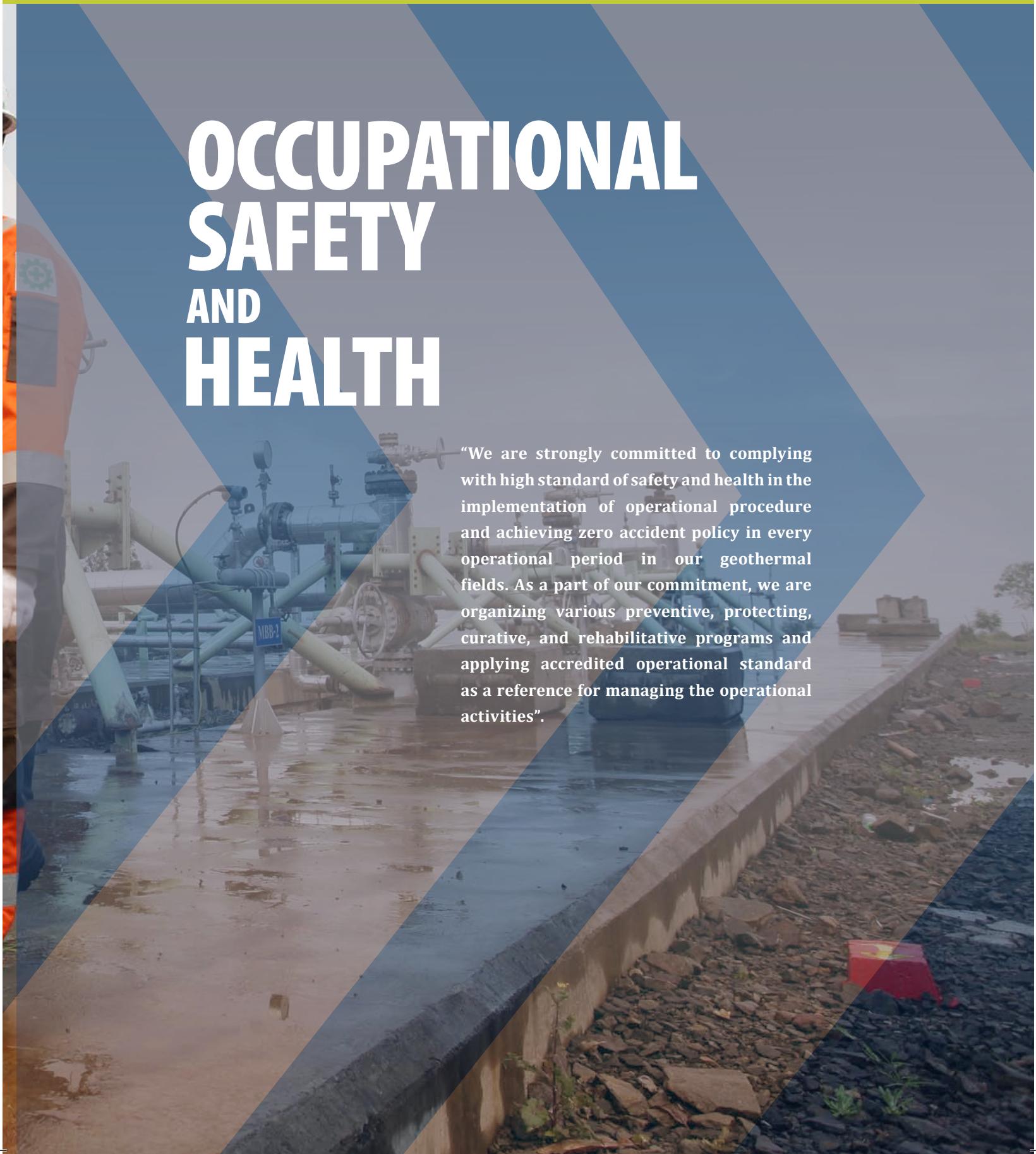
- Provide a skill for the participants
- Improve business analysis, planning, and marketing skills for participants
- Provide new business opportunities for participants to work on MSMEs and companies in the garment industry
- Provide business establishment opportunity in the tailoring industry
- Community empowerment through special skills

In total, 40 participants from 7 villages attended the course. At the end of the activity, most of the participants said that they would try to start a tailor business.

[SUMMARY OF KEY  
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THIS REPORT](#)[COMMITMENT TO  
PRESERVING AND  
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DEVELOPMENT GOALS**OCCUPATIONAL SAFETY AND HEALTH**

# OCCUPATIONAL SAFETY AND HEALTH



**"We are strongly committed to complying with high standard of safety and health in the implementation of operational procedure and achieving zero accident policy in every operational period in our geothermal fields. As a part of our commitment, we are organizing various preventive, protecting, curative, and rehabilitative programs and applying accredited operational standard as a reference for managing the operational activities".**

## PURPOSES AND OBJECTIVES

The development of geothermal power requires immense capital, as it demands specific advanced technology application along with equally intense risk of failure. Specific advanced technology is important for analyzing, computing, and operating water vapor production well drilling from the reservoir located far under the ground to be transported through pipes to the separator, scrubber, and turbine to rotate the power supply generators. Considering the extensive development investment, the steam field and geothermal power operation shall be free from the identified risks.

The major risks in the steam field and geothermal power operation range from the production wells, steam pipelines to the production facilities in the power station area. Every negligence, inattention, and lack of security system in monitoring the full condition of the vital facilities may cause fatalities that would interrupt or even terminate the operational activities.

As a consequence, since the beginning of the development and operation of geothermal power facilities and power supply to the transmission network of National Electric Company (PT PLN [Persero]), we have been committing in the implementation of high safety and health standard in adjusting to the operational procedure. We have targeted the zero accident policy in every operational period in our geothermal field.

## COMMITMENT, POLICY, AND OPERATIONAL STANDARD

We have asserted our quality Safety, Health and Environment (SHE) commitment in the statement points of "Wayang Windu Field Green Policy" as follow:

- To continuously put the SHE in the highest priority in the Production, Operation, and other business aspects
- To be proactive in evading all hazards for the employees, contractors, communities, and environment in order to ensure sustainable business
- To confirm that SHE is divisional accountability and responsibility applied from the top of the management structure

- To ensure the implementation of potential hazard identification and control system in the working place
- To constantly observe, supervise, and improve the SHE performance/sustainability and management systems in the entire Star Energy organization
- To train and develop the capacity of all the employees and contractors in order to maintain the highest standard in the implementation of SHE
- To fulfill and exceed all the legal obligations in our operational area. If the SHE regulations have been insufficient, Star Energy would adopt the best practices and apply the standard that would always protect the occupational safety and health of the personnel as well as avoid the damaging impacts on the environment.

We have imposed policies and programs regarding occupational hazard prevention and occupational health insurance in accordance with point three in the global Sustainable Development Goals (SDGs) scheme, i.e. "to ensure healthy lives and promote wellbeing for all at all ages."

To ensure quality SHE performance, we have integrated the Occupational Safety and Health Management Systems (OSHMS) as in certified operational standard of OHSAS 18001:2007 and by the Ministry of Manpower Republic of Indonesia as in Regulation No. 50 of 2012, as well as the environmental management system certified in ISO 14001:2015 and quality management system of ISO 9001:2008 as an integrated system. **[GRI 102-12]**

We also periodically conduct an audit on the implementation of the certification standards through an independent and competent third party. As a result, we have constantly delivered all the criteria set by the independent assessors, e.g. no major records in the auditing process. The latest certification process for occupational safety and health standard of OHSAS 18001:2007 was conducted by PT Lloyd's Register Indonesia on January 9-11, 2017 as a certificate renewal until March 20, 2020.

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DEVELOPMENT GOALS**OCCUPATIONAL SAFETY AND HEALTH****OCCUPATIONAL SAFETY, HEALTH, AND ENVIRONMENT COMMITTEE**

We have established Safety, Health, and Environment Committee (SHE Committee) to coordinate the SHE-related activities and programs. Regulations on the functions and position of the SHE Committee, as well as its duties and responsibilities, are stated in the Chapter X: Contractual Bargaining Agreement on Occupational Protection. The organizational structure of SHE Committee includes the Executive Management, Operational Senior Manager, and eight employee representatives (2.8% of the total permanent employees). [\[GRI 403-1, 403-4\]](#)

The duties of SHE Committee include:

- To discuss every problem in occupational safety, health, and environment (SHE) that covers the activities of protecting, preventing, and resolving the possibilities of occupational hazards;
- To conduct an investigation on the occupational accident cases that include production facility safety, occupational safety, and environmental pollution;
- To assess the SHE performance that includes standardization, production facility safety, occupational safety, and environment;
- To evaluate the implementation of SHE programs, and to conduct the evaluation, the SHE Committee would have regular meetings.

**Total Employee Representatives in the SHE Committee Structure**

Job Description	Year				
	2012	2013	2014	2015	2016
Occupational Safety	2	2	3	3	3
Occupational Health	3	2	3	3	3
Environmental Protection	2	1	2	2	2
Total	7	5	8	8	8

**SHE PROGRAMS IN 2016**

A number of strategic SHE programs has been realized in 2016 in accordance with the evaluation results from SHE Committee that include:

- Signing of collective commitment between employees of Star Energy Geothermal WW and contractors named “Saya pilih selamat, aman, sehat setiap saat dalam rangka kegiatan menyambut Bulan K3” (“I choose safety, security, and health any time in welcoming SHE Month”)
- SHEMS drilling campaign programs & OH&S National Day (Jan-Feb 2016) that include SHE Talk, film screening, campaign, workshop, and management briefing
- SHEMS Pre-audit certification audit in March
- Earth Day celebration by ceremonial tree-planting that involves SEGWWL stakeholders, such as: Regional Environmental Management Board (BPLHD), Environmental Management Agency (BPLH), District Leaders Council (Muspika), PT Perkebunan Nusantara (PTPN) Administration, Perhutani Assistant (Asper), etc.
- STAR LIGHT Awareness with focus on Lifting Operation
- Technical Guidance training by The Directorate-General of New Renewable Energy and Energy Conservation (Dirjen EBTKE)
- Visit from PROPER Council for gold candidate and PROPER Gold Award from the Ministry of Forestry and Environment
- PROPER Gold Report from BPLHD
- Aditama Award from Dirjen EBTKE for SHE commitment
- ISO 14001:2004 upgrading to ISO 14001:2015



Signing a joint commitment from SEGWWL and Contractor.



Earth Day Celebration with Tree Planting Activities



Technical Guidance Training Program from EBTKE



PROPER Council Visit for Gold PROPER candidate

## SHE PERFORMANCE STATISTICS IN 2016

### [GRI 403-2]

Operational activities that cover an extensive field range in a wearing natural condition lead to lack of alert to the

field workers that may cause occupational accidents even though we have applied the safest operational procedures and taking high consideration of environmental aspects.

The number of reported occupational accidents in 2016 with an overall accident befalling male employees, are as follows, is as follows.

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DEVELOPMENT GOALS**OCCUPATIONAL SAFETY AND HEALTH****Total Occupational Accidents**

Type of Occupational Accident	Year				
	2012	2013	2014	2015	2016
Minor	10	4	4	9	10
Moderate	2	0	0	0	0
Serious	0	0	0	0	0
Fatal	1	0	0	0	0
Total	13	4	4	9	10

## Reference:

Ministerial Decree of Minister of Mining and Energy No. 555/K/26/M.PE/1995 on SHE in General Mining

## Note:

Minor: Injuries &gt; 1 and less than 3 weeks (FAC, MTC and RWC)

Serious: Injuries &gt; three weeks (LWC)

Fatal: deceased within 24 hours after the accident

Increased intensity in field works for drilling make-up well program also has also slightly raised the frequency of occupational accidents compared to that in 2015. The lost man-hours, however, have been managed to not increase along with company's success in implementing the culture of occupational accident awareness.

The severity of the incidents in 2016 has not changed despite the increased frequency, i.e. ten (10) types of minor accidents (bee sting because of the abundance of bees in the field) that the number of lost man-hours is relatively the same. The total man-hour in 2015 is 1,774,380 hours while in 2016 it is 7,348,393 hours.

**Incident Rate (IR) and Frequency Rate**

Description	Year				
	2012	2013	2014	2015	2016
IR	0,000002	0,000000	0,000000	0,000001	0,000001
FR	2,15	0,00	0,00	0,58	0,57497

## Note :

IR= Recordable Cases/1000000

FR= (Recordable Cases x 1000000)/Safe Manhours

Recordable Case= MTC + RWC + LWC

The Incident Rate (IR) and Frequency Rate (FR) from the condition are calculated as following. To minimize the incidents in the future, we have initiated the following activities:

- Insemination and obligation for every employee to obey all work procedures as stated in the SHE-based Standard Operating Procedure (SOP) in conducting their tasks;
- Analysis on every incident to avoid the similar accident in the future;
- Restriction on employee rotation.

## OCCUPATIONAL HEALTH

We have realized a number of activities to improve occupational health awareness as a part of meeting the mandate by the regulations. These programs include education, training, counseling, prevention, and control

on the risks of serious and contagious illnesses, such as dengue fever, malaria, and others.

Our occupational health management include both medical and working environment health. For the medical health, we have initiated cooperation with private-owned and public hospitals with sufficient facilities near the operational area in Pangalengan or Bandung and the headquarter in Jakarta.

The program covers regular medical check-up for the employees as mandated in the Employment Act (UU Ketenagakerjaan) and other regulations as stated in the points on regular medical check-up, health counseling/talk for the employees and their family, and other activities. For the working environment health, we have coordinated through our SHE unit with activities such as noise/decibel measurement, sanitation treatment, emission level measurement, and others.



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DEVELOPMENT GOALS**OCCUPATIONAL SAFETY AND HEALTH****Activities to Support Occupational Health in 2016**

Type of Activity	Target Employee	Total Participants	Target Community
<b>Insemination/Counseling</b>			
Health Talk about Stroke	Maintenance Planner	10 participants	-
First Aid Knowledge with E&I team	E&I team	18 participants	-
OH&S National Day 2016 Workshop: "Gangguan Pendengaran Akibat Bising" by Anna Suraya, dr, Mkk, SpOK.	Employees & Contractors	84 participants	-
Bottle Water Handling & Hygiene Practice	Dwikora	9 participants	-
Health Talk about ISPA by CAR	Town Hall	44 participants	-
Health Talk about ISPA by dr. Soni	MTC Group	-	-
Health Talk about "Olahraga Sesuai Usia" by BKOM Bandung	Employees	20 participants	-
Health Talk about IMS & HIV by dr. Ferry Achmad Firdaus SpOG	MTC Group	15 participants	-

**Health Buletin by e-mail:**

Virus Zika

Awareness 7 Kinds Of Flood Disease

by -email to GRP all WW employee

World Kidney Day 2016 - Prevent Early Nephropathy

MSD &amp; Office Ergonomics

Asthma

SLE World Lupus Day

Alzheimer's National Elderly Day

Message Kemenkes in the month of Ramadan

List of BPJS Health hospitals Mudik Lebaran 2016

Prostate Cancer

Cervical cancer

Rabies

World Osteoporosis Day

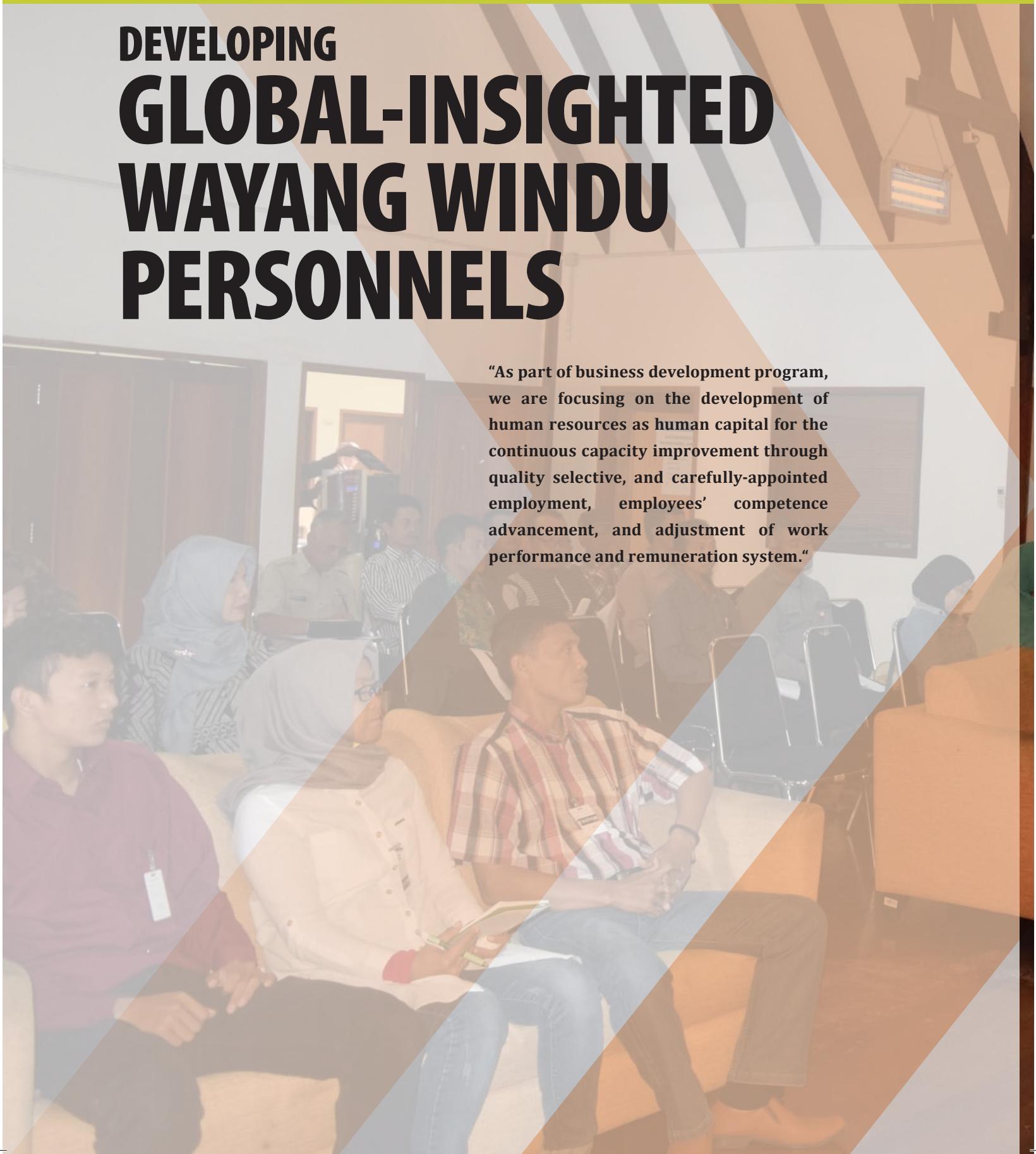
TP in the Workplace

Vaccine Information for Parents

**AWARDS**

Our achievements in managing occupational safety and health in 2016 have resulted in SHE-related awards: Zero Accident Award and HIV & AIDS Prevention and Countermeasure Program Award in Working Environment (Penghargaan Kecelakaan Nihil & Penghargaan Program P2-HIV & AIDS di Tempat Kerja) from the Ministry of Manpower Republic of Indonesia.

# DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS



**“As part of business development program, we are focusing on the development of human resources as human capital for the continuous capacity improvement through quality selective, and carefully-appointed employment, employees’ competence advancement, and adjustment of work performance and remuneration system.”**

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SUPPORTING ECONOMIC  
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**DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS**



## HUMAN RESOURCE DEVELOPMENT POLICY

Human resources are both most valuable assets and key partners in supporting the development programs and operational activities. They are also human capital and crucial part in achieving the three sustainable goals: profit, people, and planet. They play the strategic a role in gaining profits, creating people's welfare, and protecting the environment. For those reasons, we value our human resources as one of our major stakeholders whose both expectation must be taken into consideration and responsibility must be required for the business sustainability. As one of the stakeholders, human resources

have the central function in realizing Company's vision and mission in the sustainability context.

As part of business development preparation, we are focusing on the management of human resources as human capital in sustainable capacity improvement through quality, selective, and carefully-appointed recruitment, competence upgrade, and adjustment of performance and remuneration. This policy aims to the same direction as the point 8 in the global Sustainable Development Goals scheme, i.e. "to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all."



## DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS

To ensure the achievement, we have designed and applied a long-term human resource management strategy by observing human resource positioning in accordance with qualification and business development needs. We have arranged an initiative for human resource development strategy as depicted in the following chart.



## HUMAN RESOURCE MANAGEMENT

In order to ensure the best human resource performance, we are applying Human Resources Goals & Alignment HR Strategies (HRG & AHRS) that covers nine main pillars: third party contract management, engineering apprentice program, knowledge management, leadership development program, talent pool and acceleration, career management system, succession planning, performance management system, and policy review.

- i. Third party contract Management,
- ii. Engineering Apprentice Program,
- iii. Knowledge Management,
- iv. Leadership Development Program,
- v. Talent Pool & Acceleration,
- vi. Career Management System,
- vii. Succession Planning,
- viii. Performance Management System dan
- ix. Policy Review.

## We manage our **human resources** optimally by prioritizing employees' interests and considering **Company's capability**.

### • Third Party Contract (TPC)

To adjust with the company's needs and business development, our management have reviewed several parameters in managing contract-based human resources that includes manpower composition, budget, efficiency and productivity.

### • Engineering Apprentice Program

By also considering the competence of potential employees from the local area to join recruitment and support the increased composition of local employees, we have recruited and developed fresh-graduate human resources based on the long-term planning.

We provide scholarship programs for secondary, high school, and university students and Kejar Paket C (an extended learning program for those who did not graduate high school) and sewing course for the locals, in cooperation with local government. Through this mechanism, by the end of 2016, the total number of our local employees is 228 personnel (56%) of the total 408 employees.

### Total Employees by Location [GRI 401-1]

Year	Total Employees	Local Employees	Composition (%)
2011	411	267	65
2012	470	361	77
2013	450	305	68
2014	505	393	78
2015	403	223	55
2016	408	228	56

In 2016, we have recruited seven new employees, six male employees and one female employee.. [GRI 401-1]

### Total New Employees [GRI 401-1]

Gender	Year					
	2011	2012	2013	2014	2015	2016
Female	5	0	3	0	1	1
Male	12	9	5	5	2	6
Total	17	9	8	5	3	7

Potential employees join an orientation program before appointed permanent employee that includes training to increase basic competence.

### • Talent Pool & Acceleration dan Leadership Development Program

In 2016, employees focus on the reinstatement program to return the operational condition to that before the erosion. However, we still organize the mandatory training program for the employees in order to maintain the necessary basic competence.

### • Performance & Career Management System dan Succession Planning [GRI 404-3]

We implement competence-based human resource management system through an executive development by improving human resource competence in accordance with standard requirements for each level. To assess performance, we have developed a Key Performance Indicator assessment system for

**DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS**

individuals and teams as basis for career improvement and remuneration. Every year, all employees (100%) get performance reviews based on each KPI's criteria.

We also have prepared succession planning program by examining competence and career path as one of the basis for decision making. In 2016, career promotion is not applied considering the operational condition that did not perform as planned after the erosion.

**Total Employees Receiving Performance Assessment  
and Career Development**

Description	Tahun					
	2011	2012	2013	2014	2015	2016
Promotion	29	19	34	50	0	0
Demotion	0	0	0	0	0	0
Mutation/	0	1	0	2	0	2
Rotation						

**EQUALITY IN HUMAN RESOURCE  
MANAGEMENT [GRI 406-1]**

We manage our human resources optimally by prioritizing employees' interests and considering Company's capability. As a part of the implementation of quality human resource management policy and fair and responsible consideration for both parties, we apply human resource management basic policies as follows:

1. Obeying all the applicable manpower laws and regulations.
2. Maintaining good relationship with the employees based on reciprocal cooperation based on Contractual Bargaining Agreement reviewed regularly.
3. Imposing a remuneration system based on fair, transparent, and accountable performance.
4. Honoring employees' human rights including full support on the establishment and activities of Worker's Union.

5. Organizing programs for competence improvement and training to enhance the performance of individuals, teams, and eventually the corporate.
6. Applying equality in career development and remuneration by offering opportunities for all the employees in improving their career in accordance with competence and Company's development.

The implementation of this consistent equality principle results in this year's report where no discrimination based on ethnic, race, religion, and gender is recorded at all levels in the Company. The picture of the implementation of equality principle is evident in the employment composition based on positioning levels in "Employee Demography"

**WELFARE PACKAGE**

We establish the policy of reasonable rewards for employment service based on salary grade level that describes the balance in position, duty, and responsibility of every individual, along with other allowance packages in the form of holiday bonus, health insurance, pension, health service, and leave entitlement given as applicable regulations beside remuneration. We apply two types of remuneration based on employment status. Some benefits are not provided for non-permanent employees, such as pension. [GRI 401-2]

We also provide other incentives for the employees that include:

- Education/training fee
- Regular medical check-up
- Loan on salary
- Prostheses, glasses, and hearing aid purchase
- Scholarship for employee's family member
- Hajj fund
- Property fund
- Annual holiday leave



We fully support the activities of **Workers Union** to bridge frictionless communication between employees and management to meet their **expectations** and to enhance company's **performance**.

**DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS**

We exclusively apply the 90-day maternity leave for female employees along with the guarantee of returning to work after the leave. During the time, their employment rights, including salary and other benefits, are still fulfilled by the Company. We also provide unattended leave for an employee who is continuing their study abroad, and they may return to work after finishing the education.

**Pension Program [GRI 201-3]**

We provide pension program in cooperation with competent companies in managing pension fund. To ensure budgetary capability for pension fund, we offer pension contribution. The pension premium is allocated from two sources:

1. Employer Contribution of 6% of Basic Pension Income (PhDP)
2. Employee Contribution of 2% of the PhDP; as an employee enters retirement, all their pension funds will be given at once (lump sum) through Pension Fund for Financial Institution (Dana Pensiun Lembaga Keuangan).

**Award Program for Employees**

Beside those programs, we provide awards for employees as part of development. The awards include Achievement Award, Paragon Award, and Retirement Award.

**IMPROVING THE QUALITY OF  
INDUSTRIAL RELATIONSHIP [GRI 407-1, 102-41]**

We fully support the activities of Workers Union to bridge frictionless communication between employees and management to meet their expectations and to enhance company's performance. We believe that it is possible to achieve by having a constructive interaction with the employees in collective through Workers Union. Such interaction facilitates two-way communication and mutual understanding that engender agreements stimulating the best performance as well as fulfillment of employees' rights.

Contractual Bargaining Agreement signed on September 10, 2015 has applied since September 10, 2015 until September 9, 2017. The Agreement has been recorded in the Department of Manpower and Transmigration Bandung Regency under the Decree No.230/72/I/HIPK/2006 dated January 6, 2006 and has been registered in the Ministry of Manpower and Transmigration c.q Directorate-General Industrial Relations and Manpower Social Security No.134/Pdf.03/PKB/VIII /2012.

Points on the Agreement derive from collective bargains between employees and the Company, and they have been consented by all the SEGWWL's employees who have become members of SEGWWL Workers Union (Serikat Pekerja-SEGWWL) by 100% as they have come to conclusion. Therefore, all employees' rights have been protected and represented in the Contractual Bargaining Agreement.

The Agreement regulates principal directives and agreements relating to the rights, obligations, and relationship between employees and the Company, including minimum notification time if there is a substantial change in working condition, such as closing of a unit, and others. It also controls resolution of disagreement that during the report year, no dispute case that leads to strike is recorded.

**Freedom to Organize [GRI 407-1]**

We guarantee the rights to organize and establish a workers union in the Company, including the freedom to participate in the administration as stated in the Law No. 21 of 2000 on Trade Union. The total number of permanent employees who become members of Trade Union (SP-SEGWWL) is 185, or 83.7%, of total 221 permanent employees.

Employees may propose for improvements, opinions, or constructive criticism in the operational pattern and welfare to the Top Management through SP-SEGWWL.

## We build conducive, healthy, safe, and convenient physical and psychological environment around the operating area to create positive impacts on the employee's performance.

The inputs may be delivered in the General Meeting or other forums. This mechanism shows the importance of employees as one of the stakeholders who are also responsible to the sustainability of business and the company.

### Convenience in Work Environment

We build conducive, healthy, safe, and convenient physical and psychological environment around the operating area to create positive impacts on the employee's performance. The conducive condition manifests in the relatively low turnover rate of employees. In this report period, we recorded four resigned permanent employees. The number represents only 1.75% of the total 228 employees by the end of the year.

### Turnover Rate of Permanent Employees

Description	Year					
	2011	2012	2013	2014	2015	2016
Retired	2	1	1	5	3	0
Deceased	0	3	0	0	0	0
Resigned	2	3	2	4	4	4
Total	4	7	3	9	7	4

### Man-hour and Change in Man-hour

We apply regular man-hour, shift, and special man-hour for operational and security tasks.

We provide compensation in the form of overtime fee as regulated in manpower laws for those who have to complete their task longer than the standard man-hour. If one day there is a change regarding man-hour, operational procedure, and operational termination, we spare minimum three months before the said change applies effectively.

### Reward

Rewarding system for employees covers basic salary, leave pay, employment reward, employee of the year, performance incentive, bonus, and other allowances (see "Welfare Package"). The amount of minimum pay for a new employee at the lowest level is higher than the local regional minimum wage or provincial minimum wage.

As an illustration, below is a table of comparison between salary for the newly hired at the lowest level in SEGWWL and the main provincial minimum wage. [GRI 202-1]

### Comparison between Salary/Reward and Provincial Minimum Wage [GRI 202-1]

Year	Low-level Employee	Provincial Minimum Wage	Percentage
2011	Rp. 2,842,000	Rp. 1,123,000	153 %
2012	Rp. 3,155,000	Rp. 1,223,800	257.8 %
2013	Rp. 3,284,000	Rp. 1,388,333	236.5 %
2014	Rp. 3,539,000	Rp. 1,35,476	203.9 %
2015	Rp. 3,539,000	Rp. 2,001,195	176.8%
2016	Rp. 3,539,000	Rp. 2,280,175	155.2%

**DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS****Human Rights Recognition**

We are fully committed in continuously honoring and applying human rights aspect in every operational level. The policy to facilitate freedom to organize, practice politics, and channel political aspirations, including providing inputs for Company's development (through Worker's Union or available mechanism for the purpose) is part of our respect to human rights.

**Training and Insemination for Human Rights**

We organize training for competence improvement for Company Security Unit to ensure human rights application in securing Company's assets. For that reason, the training syllabus is adjusted with that from Indonesian Police that includes, among which, debriefing and knowledge about human rights for the security guards.

**Age Requirement for a New Employee**

We uphold government's policy as stated in Law No. 13 of 2003 on underage workers by requiring a new employee to be at least 20 years old, proven with a legitimate identification card, and with minimum secondary school (SMP) diploma.

**Demography and Total Employees [GRI 102-8]**

We apply three employment statuses: permanent, non-permanent, and outsourced. In the 2016's report, it is recorded that the number of Company's permanent employees is 228 personnel. Out of the number, 187 employees work in Wayang Windu's fields while 41 others are stationed in the Headquarter.

**Total Number of Employees based on Employment Status**

Description	Year					
	2011	2012	2013	2014	2015	2016
Permanent	208	212	218	214	221	221
Non-permanent	23	17	6	5	2	7
Outsourced	180	241	226	286	180	0
Total	411	470	450	505	403	228

**Total Number of Employees based on the Work Station**

Description	Year					
	2011	2012	2013	2014	2015	2016
SEGWWL Field	190	185	189	183	191	187
Headquarter	18	27	29	31	32	41
Total	208	212	218	214	223	228

The total number of non-permanent employees is seven (7) personnel and the outsourced is zero whose duties include: maintenance, cleaning service, office assistant, driver, and catering. The numbers have not been decreased from the previous year in 2015 of two (2) non-permanent employees out of total 180 employees, as efficiency was implemented in the Company.

Of all the permanent employees in 2016, the majority of them hold high school (43.86%) and Bachelor's degrees (33.33%). The remaining graduated with Diploma 3 from vocational schools (15.25%), Master's degree (5.83%), while the rest are Doctoral graduates.

The largest composition of high school graduates is related to the non-operational scope in security whose main duty is security and field patrol that require less skill but stronger physical condition. The composition of employees based on educational level is shown in the following table.

**Total Number of Permanent Employees based on Educational Level [GRI 401-1]**

Description	Year					
	2011	2012	2013	2014	2015	2016
Primary/Secondary School	5	5	3	3	3	3
Highschool	128	117	106	100	100	100
Vocational School (1-3 years)	14	19	34	34	34	35
University Undergraduate (S1)	57	62	63	64	72	76
University Graduate (S2/Master)	4	9	12	13	13	13
Doctorate (S3/Doctor/Ph.D)	0	0	0	0	1	1
Total	208	212	218	214	223	228



## DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS

## Total Number of Employees based on Gender [GRI 401-1]

Gender	Year					
	2011	2012	2013	2014	2015	2016
Female	20	13	16	16	19	19
Male	188	199	202	198	204	209
Total	208	212	218	214	223	228

## Total Number of Employees based on Age [GRI 401-1]

Age (by Year)	Year					
	2011	2012	2013	2014	2015	2016
19 - 30	16	29	36	26	28	31
31 - 40	80	79	67	60	63	63
41 - 50	98	94	99	114	121	122
>=51	14	14	16	14	11	12
Total	208	212	218	214	223	228

We do not discriminate nor restrict on a certain number of employees based on gender. In accordance with the nature of the job, however, the total number of female employees is lower than that of their male colleagues, i.e. nineteen (19) female employees or 7.89% of the total employees. Most of our female employees are stationed in the administration and other jobs other than field operation. In 2016, Company's management is handled by eleven (11) managers and thirty (30) supervisors assisted by 168 staff and 95 non-staff members as shown in the following table.

## Positional Composition of Permanent Employees in 2015 [GRI 401-1]

Description	Total	Year					
		Gender		Age			
		Male	Female	<30	30-50	>50	
Manager	11	11	0	0	11	0	
Supervisor	30	26	4	0	30	0	
Staff Member	76	67	9	8	68	0	
Non-Staff Member	111	105	6	16	95	0	
Total	228	209	19	24	204	0	

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SAFETY  
AND  
HEALTHDEVELOPING  
GLOBAL-INSIGHTED  
WAYANG WINDU  
PERSONNELSQUALITY  
DEVELOPMENT FOR  
SUSTAINABILITY  
GOVERNANCEGRI STANDARDS  
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SUPPORTING ECONOMIC DEVELOPMENT

# SUPPORTING ECONOMIC DEVELOPMENT

“We strive to support national economic development acceleration through electric supply by efficiently operating geothermal power, optimizing power performance in our operating area, and expanding business in geothermal potential while considering economic growth and development of local communities.”



## SUPPORTING NATIONAL ECONOMIC DEVELOPMENT MENDUKUNG

One of the supporting factors in a country's economic growth is the availability of basic infrastructures. By the end of 2016, referring to the data on the index of infrastructure competitiveness issued by Global Competitiveness Index, Indonesia ranks in 60th out of 134 countries, a huge leap from the 90th position in 2011. The Government has targeted index escalation to 40th in the next years to compete with those in Southeast Asia, such as Malaysia, Singapore, and Thailand.

In order to catch up and reach the target, in the last three years, Indonesian Government has built vital infrastructures, such as roads, seaports, airports, telecommunication and electrical facilities. Particularly for electricity, until the end of 2016, the electrification ratio in Indonesia (excluding non-PLN customers) is around 89.10%, relatively below that in other Southeast Asian countries, such as the Philippines (96%) or Singapore, Thailand, and Malaysia (100%).

As part of the efforts to build electrical infrastructures, the Government is realizing the 35,000 mega watt program to be completed by the end of 2019. The electrical development program includes the establishment of power supplies, transmission networks, and power distribution spread through the entire country to support Electrification Ratio of 97.4% by the end of 2019 to support equal economic growth.

In addition, through the program, the Government has also targeted increase in power supplies from eco-friendly renewable energy, such as water, geothermal, wind, and solar. We are determined to support the target achievement by advancing our gothermal power supplies as a commitment to contribute in national economic development.

In 2016, we are able to supply 1,923,953 MWh or equal to 6,926,230 GJ to PT PLN network, an increase to 42.24% from the previous year of 1,111,244 MWh. The significant increase results from the unexpected land erosion that terminated the supply from May 2015 until the end of October. In the following years, we are targeting increase in power from Wayang Windu's geothermal fields and other geothermal fields that we are managing and developing.

We also continue our direct support in national economic growth through economic value distribution from tax payment and locally-generated revenue, as well as consistent Company's Corporate Social Responsibility programs.

## OPPORTUNITY FOR GEOTHERMAL ELECTRIC DEVELOPMENT

The Government has confirmed a commitment to develop renewable energy-based electricity through the issuing of Government Regulation No. 79/2014 on National Energy Policies. In addition, as a national institution managing technical implementation in energy sector, including electricity and renewable energy, the Ministry of Energy and Mineral Resources recently has issued three regulations supporting the increased uses of renewable energy sources and electric supplies: Ministerial Decree of the Minister of Energy and Mineral Resources No. 10 of 2017 on Principles in Electrical Power Trade Agreement, Ministerial Decree of the Minister of Energy and Mineral Resources No. 11 of 2017 on Utilization of Natural Gas for Power Plant, and Ministerial Decree of the Minister of Energy and Mineral Resources No. 12 of 2017 on Utilization of Renewable Energy for Power Supply.

Ministerial Decree of the Minister of Energy and Mineral Resources No. 12 of 2017 issued on January 27, 2017 aiming to support the optimization of renewable energy sources and promote new advanced technologies from

**SUPPORTING ECONOMIC DEVELOPMENT**

private developers for the utilization of renewable energy sources, including geothermal. The Ministerial Decree also regulates price limit for the power from renewable energy sources, such as solar, wind, water, biomass, biogas, waste, and geothermal. We are targeting total capacity of our power supply to 7,200 MW in 2025.

Studies show that the total available geothermal potential in Indonesia is equal to 29,612 MW, or 40% of the world's geothermal potential. Around 53% of the capacity has been installed in power supply in Indonesia in the end of 2016 that reaches 56,063 MW (52,889 MW in 2015). Meanwhile, total geothermal potential that has been utilized for geothermal power supply in Indonesia in 2016 reaches 1,708 MW (source: Ministry of Energy and Mineral Resources, 2016), or only 5.8% of the available potential, including Company's power supply of 227 MW in 2016.

It indicates the opportunity to continue developing the current business. The risks in utilizing geothermal resource include the newness as renewable energy source, the costly expense for the development with relatively high risk of failure, and the location of the potential which is mostly in the conservation forests in the mountain with minimum access.

### **Realizing the Potential for Geothermal Field Development**

In order to seize the opportunity in developing the geothermal power supply, as targeted in the national plan, we are running three programs: optimizing the performance of the existing units, building new units, and requisitioning the management of geothermal fields. To maintain the performance of the existing units, in 2016 we have taken the initiative to improve the quality of Integrated Control Procedure and Wayang Windu Integrated Management Systems. The main objectives of the implementation of the programs are:

- To increase the efficiency of the operational conditions of the main equipments and to maintain the protection system in order to endure the preparedness and the capability of the power plants to provide the optimal outputs.

- To ensure synergy, integration, and reliability of the power plants.
- To secure the improvement of power plant performance in normal operational condition.

In order to realize the development of unit 3, in this report year, we resume some production well drillings as part of the make-up well program.

To expand our business in geothermal source, we have requisitioned Chevron's geothermal field operations in Indonesia and the Philippines. The Share Sale and Purchase Agreements with Chevron Global Energy Inc, Union Oil Company of California, and the affiliation ("Chevron") were signed on December 22, 2016. The Agreements secure us the majority of the shares (68.31%) in the said company while the rest are owned by the strategic partners: AC Energy-the Philippines (19.3%) and EGCOThailand (11.89%).

We are also seeking for resolution in the geothermal development program in Jailolo District, West Halmahera Regency, North Maluku that will be managed by Star Energy Geothermal Halmahera with estimated electrical capacity of 2x5 MW.

For the operation and development of the geothermal power supply, we are committed to comply with all the applicable terms in developing and conducting trade contract of our electrical power and strive to improve an effective and efficient management.

### **CONTRIBUTION TO THE COUNTRY**

Through a variety of taxation obligation fulfillment, import duties and land retribution/geothermal potential utilization, we have directly contributed to the country. We oblige to the Government regulations in taxation in the forms of sale tax, income tax, and other relevant taxes as our contribution. Compliance with all tax laws and regulations results in zero amercement from infringement in this year's report.

Fulfilling the optimal and maintained to capacity power supplies, we contribute to the national economic growth considering the sufficient electrical supply that has positive impacts. We also play a part in material aspect by building public facilities and infrastructures (see "Community Development") that includes:

- Roads in rural areas
- Infrastructures for village and district administration
- Places of worship
- Educational facilities from playgroup/kindergarten, primary, secondary, and high schools

## **SUPPORTING LOCAL ECONOMIC GROWTH [GRI 203-2]**

We support local economic growth both by direct and indirect contributions in the forms of property tax for our offices and other supporting facilities, operational vehicle tax that would increase components of locally-generated revenue, public facilities and infrastructures, and substantiating local economic growth through our products and services from the local vendors, in addition to employment in our operational areas.

As an image, the number of the locals who are recruited by the Company is 228 personnels or 56% of the total employees in 2016. Some of the local employees have succeeded in their career development as staff member, supervisor, and even manager (see "Our Individual Development").

## **RELATIONSHIP WITH VENDORS, CONTRACTORS, AND PARTNERS**

In order to improve our employees' competence and vendor management for SHE level equal to our standard, we apply Contractor Safety and Health Environmental Management System (CSMS) in the screening process and performance assessment for our major contractors. [GRI 308-1]

In accordance to CSMS criteria, for several major contractors with particular job value, we require fulfillment of rights for contractors in the screening process and performance evaluation. As a part of our commitment to human rights, we have also introduced whistle-blowing system to guarantee that every procurement transaction has been transparently conducted and can be accounted for.

CSMS consists of six phases: risk assessment, pre-qualification, selection, pre-job activity, task management, and final evaluation. We still require compliance to product quality, credibility, accountability, accuracy of supplies from the partners, and competitive price. We run a regular evaluation program for the list of partners, in the procurement process, execution, and end of contract period, as the basis for the following screening process. In the report year, all the main partners (100%) have been undergone the screening process. [GRI 414-1]

## **PRODUCT LIABILITY AND CONSUMER PROTECTION**

Our product is electrical power of 150 Kilo Volt (KV) that is sold to PT PLN as the only customer in accordance to the regulations. It does not require packaging nor does it need production code to be listed. Considering the single customer, and as mandated in the law, we do not engage in the activities of marketing, marketing communication, and its kinds in selling the power.

The power will be supplied to transmission networks in Java-Madura-Bali managed by PT PLN. In this mechanism, the following general provisions apply: [GRI 417-2]

- Power sales are regulated in a sale contract valid for one period.

- The selling price of electricity per kWh refers to the Regulation of the Minister of Energy and Mineral Resources.
- The amount of power sold in each period is determined according to the vendor's capability and the need for interconnection power load.
- Vendors and Wayang Windu must be able and fully committed to meet the amount of electrical power and voltage contained in the contract. Instead, PT PLN is obligated to absorbing the entire power.

When the vendor falls through to meet the amount of power stated in the contract, they shall be liable for a shortage of power supply in accordance with agreed provisions. Conversely, if PT PLN is unable to absorb all of the generated power supply under the contract, it is required to pay a fine on the excess supply after the agreement.

To ensure the enforcement of the provisions on power supply and voltage, we establish intensive communication with PT PLN. All information concerning the plan of periodic maintenance program for steam generating installation and generator, we convey and discuss it with PT PLN. The application of production procedures and administration of electrical power sales results in zero complaint during the reporting period nor sanctions in the form of financial fines related to breach of contract in power supply and product usage.

### **Product Safety and Health [GRI 416-2]**

The 150-KV power lines are high voltage power that could endanger health and safety when they are approached, let alone touched. For prevention, we complete the power line and connection system from the power plant to PT PLN's transmission network with reliable security and insulator so as not to imperil humans and the surrounding environment. We also apply tight security to the area around the production well although the location is remote from the nearby community. Only authorized employees on duty are allowed to enter and work around the production well. In that location, the employee shall be dressed according to the established SHE standards.

In pipelines for the flow of geothermal steam from production wells, we use special coatings as heat insulators so as not to harm people or animals that touch them which are also safe for the environment. We undertake periodic evaluations and inspections of all conditions for securing production facilities, production wells, and installation of electrical grid connections to the PT PLN's transmission system as a compliance to all security provisions and procedures so as not to pose a threat to the health and safety of employees, communities, living creatures, and the environment.

For that reason, during the reporting year we do not receive reports or complaints that lead to indications of violation to surrounding health and safety in the process of providing products. **[GRI 419-1]**

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QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE

# QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE

**"We demonstrate a strong commitment to improving the quality of best sustainability governance practices through compliance with regulatory requirements, improving the quality of basic principles of organizational management, fulfilling accredited operational standards more than established, meeting stakeholder expectations according to the resources, and ensuring the achievement of sustainable development objectives as in the global-scaled development goals".**



## BEST GOVERNANCE GOALS

The Company is committed to improving the quality of good corporate governance practices in all operational aspects consistent with the following objectives:

- To achieve maximum growth and results that will increase the Company's prosperity, and to realize the value of shareholders in the long term by taking into account the interests of other stakeholders;
- To control and direct good relationship with the shareholders, Board of Commissioners, Directors, and all of the Company's stakeholders;
- To support Company's internal control and development activities;
- To manage all resources more responsibly to all stakeholders;
- To improve the welfare of all employees and provide optimal benefits for all stakeholders.

The Company strives to improve the quality of the implementation of Good Corporate Governance (GCG) core principles, namely: Transparency, Accountability, Responsibility, Independence, and Fairness. In order to support the effort, the Company has completed several necessary institutions, including:

- Contractual Bargaining Agreement, which contains key rules that bind employees in fulfilling obligations as workers and abiding by the rules of work
- The Code of Conduct, which contains guidelines to behave in interacting with internal and external parties and professional associations within the Company.
- Guidelines for the Management of Whistleblower Policy, which provides guidance to all parties in contributing to the prevention and overcoming of abuse of authority and violations leading to acts of corruption and fraud.

## GOVERNANCE STRUCTURE AND MECHANISM [GRI 102-18]

Company's organizational structure and governance consists of shareholders and Board of Directors acting as managers in carrying out daily operational activities. Operational decision-making mechanism exists within the

Board of Directors while Company's organs with the highest authority remain at the General Meeting of Shareholders (GMS). To determine the direction of business development and to evaluate the performance of Board of Directors, shareholders shall hold the Annual General Meeting of Shareholders (AGMS) once a year and Extraordinary General Meeting of Shareholders if required.

## INTERNAL CONTROL

The Company applies internal control as part of the implementation of the principles of accountability and transparency. Management guarantees the effectiveness and efficiency of operations, the implementation of all operating standards, compliance with rules and regulations, and the accuracy and reliability of reporting through the Internal Audit Department.

Description of duties, responsibilities, authorities, and mechanisms for reporting audit results is clearly stated in the Internal Audit Charter which guides the Internal Audit personnel in carrying out their duties. The Charter has been approved and authorized by the Board of Directors and acknowledged by shareholders. In addition, the internal audit personnel shall always refer to the International Standards for the Professional Practices of Internal Auditing issued by The Institute of Internal Auditors (IIA).

To ensure compliance with applicable laws and regulations, some references are also used as benchmarks for conducting audit, including Good Corporate Governance Principles, Code of Conduct, Sarbanes-Oxley, COSO Frameworks, and Enterprise Risk Management.

In order to maintain and improve the quality of audit results in accordance with applicable audit standards, Internal Audit personnel continuously develop competence through various kinds of education, including continuing studies, professional certification, and operational training.

Auditors in the Internal Audit unit are also provided with special education on corruption and prevention efforts. To prevent and minimize such dishonorable actions, the Internal Audit unit periodically conducts checks on

OCCUPATIONAL SAFETY AND HEALTH	DEVELOPING GLOBAL-INSIGHTED WAYANG WINDU PERSONNELS	SUPPORTING ECONOMIC DEVELOPMENT	GRI STANDARDS INDEX	CONGENIALITY WITH SUSTAINABLE DEVELOPMENT GOALS
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### QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE

work units prone to corruption, such as procurement, maintenance, and finance. [GRI 205-1]

We impose sanctions, up to the dismissal, accompanied by legal process on any action that is strongly indicated as an act of corruption. By 2016, all indications of corruption within the Company, if any, have been handled and resolved properly.

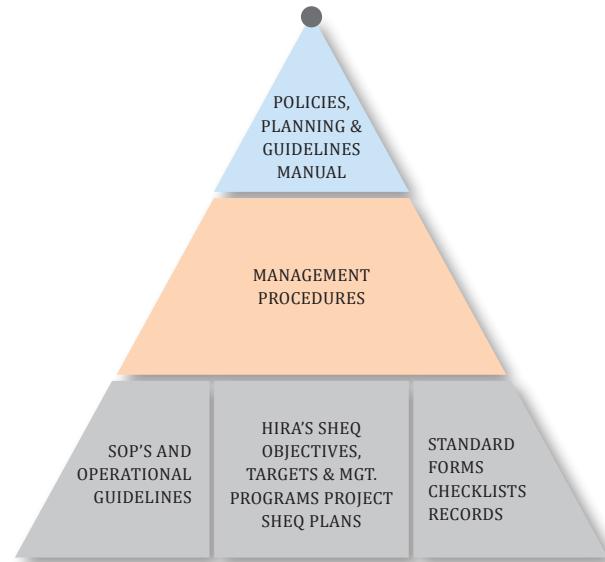
### WAYANG WINDU INTEGRATED MANAGEMENT SYSTEM (WWMS)

[GRI 102-11, 102-12]

We apply several accredited operating standards: ISO 14001:2004 for environmental management, OHSAS 18001:2007 for safety and health, and ISO 9001-2004 for quality management in addition to other unaccredited operating standards, such as maintenance operation standard and so on. To facilitate the administrative system of all operating standards, we have integrated all standards in Wayang Windu Integrated Management System (WWMS).

The WW integrated system is an effective effort to ensure improved operational performance, including environmental management. In daily operations, continuity is always maintained since the PLANNING stage with the Hazard Identification & Risk Assessment (HIRA); IMPLEMENTATION with various standard procedures; CHECK with Internal Audit and External Audit (such as PROPER, ISO 14001, OHSAS 18001, audits by Environmental Agency Bandung Regency, Dir-Gen New Renewable Energy and Energy Conservation, etc.); and ACTION as a manifestation of continuous improvements through Performance Improvement Request. The implementation

### Wayang Windu Policy Statement



### BUSINESS ETHIC [GRI 102-16]

As part of our commitment to improve the quality of GCG best practices and to maintain trust and long-term business relationships, we have Code of Conduct which includes the Company's responsibility to always uphold and apply the business ethics prevalent in the international order. All levels in the Company are required to comply with and apply all of the provisions contained in the Code through "Commitment Statement". Some of the rules of business ethics contained in the Code of Conduct include:

- **Whistleblower System**

As part of efforts to improve the quality of Good Corporate Governance, including participation in eradicating corruption, bribery and other fraudulent practices, the Company has consistently and will continue to implement the guidelines of the Whistleblower System as a follow up to the demands of transparency, accountability, and fairness in business relationships. In the management guidelines,

the Company also establishes mechanisms that enable audacity of complainant witnesses through procedures capable of ensuring the confidentiality of the reporting identity and investigative officers.

- **Prohibition on Giving and Receiving Gifts and Donations**

We consistently prohibit granting and gifts and gratuities in any form, whether by parties within or outside the Company's environment. This regulation is applied to uphold independence of decision making while minimizing the potential for conflict of interests that may degrade the trust to the Company's integrity.

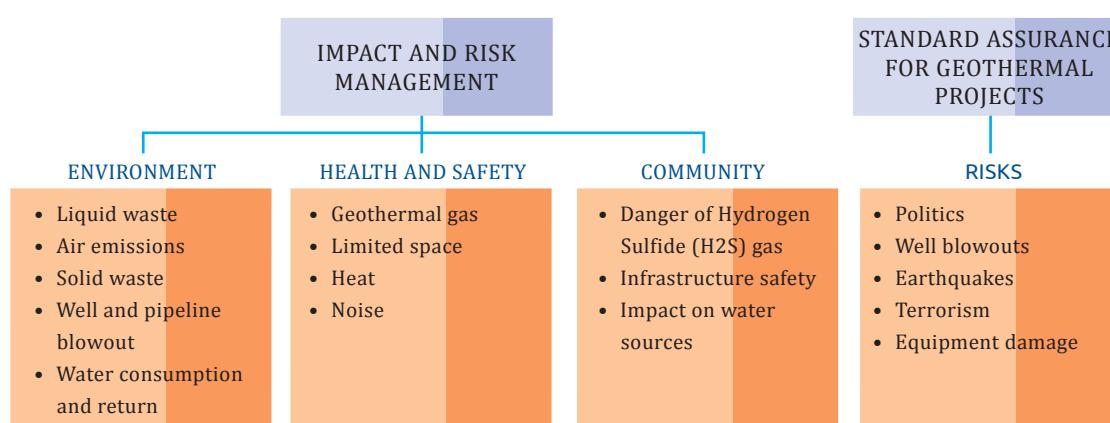
- **Investment Policy, Procurement of Goods and/or Services [GRI 414-1]**

We implement a transparent and accountable procurement policy, fulfilling the principles of effective and efficient, open, fair and non-discriminatory competition. We strive to process the procurement of goods and services through fair competition in accordance with prevailing laws and regulations as a form of corporate commitment and business principles that uphold honest and anti-monopoly business practices.

In the contractor selection procedure with substantial value, such as in the exploration and exploitation drilling project, we require compliance and respect to human rights and only consider a reputable company with respect to human rights. All new vendors and partners will undergo the screening process related to the said human rights, including the fulfillment of all labor requirements.

- **Equal Opportunity**

In developing the management in remote areas, we uphold the fulfillment of human resources based on the principles of competence and equal opportunity. Prior to the exploration and exploitation activities, we constantly conduct a series of thorough environmental impact studies, including local community's social and cultural life. We also apply the principle of equal opportunity in the recruitment process, competency enhancement and career improvement by basing on a dynamic and openly applied rating system, including to talented human resource candidates from the local community.



- **Political Engagement and Public Policy**

Perusahaan We strongly prohibit the use of Company's fund and assets for the interests of political parties or candidates for a party, both directly and indirectly. We also have never engaged in the preparation of public policies, only limited to proposed ratification of investment regulation in geothermal power supply which is channeled to association of geothermal business investors/companies.

Other involvement is only on the proposed implementation of community development programs that are sought to synergize and support each other with remote village community development programs initiated and/or implemented by the Central/Local Government

- **Submission of Opinion to the Board of Directors**

We grant the right to express opinions and advise the Board of Directors for the employees through formal mechanisms, such as meetings of Workers Union with Management or company work meetings. This mechanism is aimed at conducive and positive relationship with internal stakeholders, in particular between Management and employees that would benefit Company's performance.

## **EXTERNAL INITIATIVE COMMITMENT**

### **[GRI 102-13]**

We actively adopt some external initiatives as a response to climate change, namely the implementation of the Clean Development Mechanism (CDM), part of the Kyoto Protocol implementation agreed by the Government through Law No.17 of 2004 on the Kyoto Protocol Endorsement at the United Nations Framework Convention on Climate Change (UNFCCC).

We also play an active role in creating a climate of investment in geothermal utilization as a source of electrical energy generation through the following organizations:

- Asosiasi Panas Bumi Indonesia (API)/Indonesian Geothermal Association
- Masyarakat Kelistrikan Indonesia (MKI)/Indonesian Electricity Community
- Masyarakat Energi Terbarukan Indonesia (METI)/ Indonesian Renewable Energy Community

## **STAKEHOLDER MANAGEMENT**

### **[GRI 102-40, 102-42, 102-43, 102-44]**

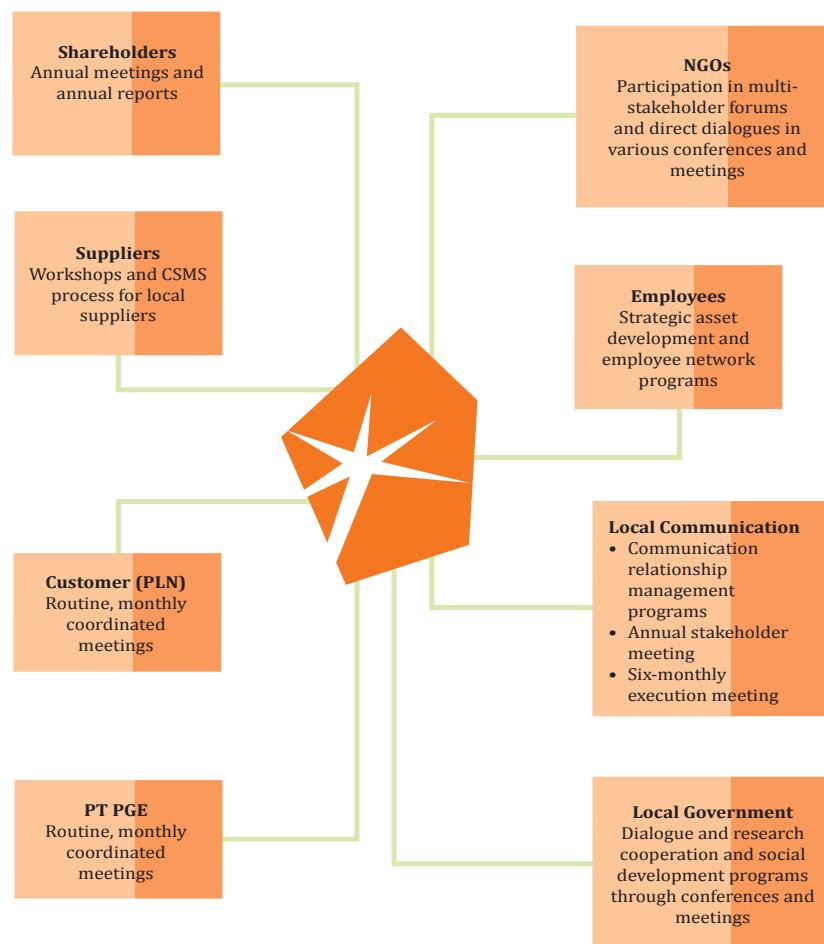
We believe that the long-term sustainability of business has a meaning to success in fostering harmonious relationships with all stakeholders. Therefore, we always strive to create such harmony with them through the quality stakeholder relationship management.

To that end, we have carefully identified the stakeholder groups that have an influence on business sustainability as well as strive to meet expectations in accordance with the available resources.

These stakeholders include customers, employees, Government/Regulators, partners/contractors/vendors, PGE, NGOs, and surrounding communities.

Through the management of reciprocal relationship, we strive to understand and meet the expectations of stakeholders as best as possible, as per the resources available. We also hope that stakeholders will notice our efforts, the key obstacles, and together anticipate how far their expectations are met.

### Chart Identifying Stakeholders and their Demands



Stakeholders and Basis for Stakeholder Determination (102-40) (102-42)	Method of Approach & Frequency of Meeting (102-43)	Focus (102-44)	Follow up (102-44)
Shareholders	- Annual General Shareholder Meeting/ once a year	Annual report to shareholders	Approval of financial statements and activities of the Board of Directors in managing the company in which the approval of the GMS is required.
- Representatives	- Extraordinary Shareholder Meeting/ Adjusted		
Board of Directors			
- Responsibility	Board of Directors Meetings are conducted according to the company's operational requirements. Every month the Board holds regular meetings specifically to discuss operational activities.	Company's operational activities	Approval of Annual Report & other matters where the Board of Directors' resolutions are required.
Customer (PT PLN)			
- Influence	Monthly operational & maintenance coordination meetings	- Maintenance schedule for power plants	Agreement on maintenance schedule

**QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE**

<b>Stakeholders and Basis for Stakeholder Determination (102-40) (102-42)</b>	<b>Method of Approach &amp; Frequency of Meeting (102-43)</b>	<b>Focus (102-44)</b>	<b>Follow up (102-44)</b>
		- Loading of the plant	Monthly and weekly loading agreements
		- Reliability of operation	Maintaining the reliable operation of Grid and Plant systems
- Dependency	The committee meeting between PT PLN, PGE, and Star Energy (Joint Committee Meeting)	-ESC application to operational activities	Agreement between PT PLN and PGE and Star Energy
Employees	Townhall meetings, gathering, outbound, training	Asset development program	Provide input on programs to the company
Representatives	Workshop and seminar, mentoring & coaching	Employee network strategies	To develop employees
	Frequency adjusted		
PGE	Meeting discussing Budget Plan	Work plan realization is explained in presentation	Include program realization in a presentation with photos
- Representative	WP & B (per quarter)	presentation	for documentation
Contractors/Vendors	Annual SHE Plan audit gathering every quarter of semester	Evaluation	Provide inputs to improve performance
- Dependency			
Government/local administration	Regular meeting with government representatives	Mechanism in giving information and program as in job description	Compliance with government regulations
- Representative	Participating in government programs in accordance with company's		
	Provide transparent and comprehensive information through inter-institutional meetings and FGDs	Absorb and strive to combine aspirations and manage the networks	Conduct cooperation in research and socio-economic development program to support community's welfare
Local community	Execution meeting every six months	Social contribution through community-based programs (economy, education, health)	Activities with the community (education, economy, health, and environment)
Proximity	Community relation program	Build basic public and social infrastructures	Design, provide necessary information transparently and perform work in self-management
	Stakeholder meeting twice a year		
	Provide transparent and comprehensive information through four-monthly bulletin and inter-institutional meetings and FGDs		
	Establish a team of extension workers whose members represent the elements of society as a mediation bridge between the company and the surrounding community		
NGO	Participation in multi-stakeholder forum and direct dialogue initiative in conferences and meetings	Information on government regulations	Provide and explain information transparently
Representative	Provide transparent and comprehensive information through stakeholder meetings, inter-institutional meetings, and FGDs		
	Frequency for FGD adjusted		

## WELCOMING NEW PARADIGM ON SUSTAINABLE DEVELOPMENT

The Millennium Development Goals (MDGs, 2000-2015) concept with the 8 following global formula, implemented since 2000, has officially ended in 2015.

1. To eradicate extreme hunger and poverty
2. To achieve universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development

As a continuation, all countries joining the United Nations have agreed on the concept of sustainable development as the successor of the MDGs. The development concept is called Sustainable Development Goals (SDGs).

The SDGs are discussed and agreed upon by almost all member states of the United Nations, in contrast to the MDGs that were only initiated by 34 developed countries from America, Europe and Australia and some Asian countries in the Organization for Economic Co-operation and Development (OECD) group.

The formulation of 17 goals of global sustainable development (17 Global Goals) in SDGs that will be implemented in 2016-2030, are as follows.

1. No Poverty  
"End poverty in all its forms everywhere"
2. Zero Hunger  
"End hunger, achieve food security and improved nutrition, and promote sustainable agriculture"

3. Good Health and Well-Being  
"Ensure healthy lives and promote well-being for all at all ages"
4. Quality Education  
"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"
5. Gender Equality  
"Achieve gender equality and empower all women and girls"
6. Clean Water and Sanitation  
"Ensure availability and sustainable management of water and sanitation for all"
7. Affordable and Clean Energy  
"Ensure access to affordable, reliable, sustainable and modern energy for all"
8. Decent Economic Growth and Work  
"Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all"
9. Industry, Innovation, and Infrastructures  
"Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation"
10. Reduce Inequalities  
"Reduce income inequality within and among countries"
11. Sustainable Cities and Communities  
"Make cities and human settlements inclusive, safe, resilient, and sustainable"
12. Responsible Consumption and Production  
"Ensure sustainable consumption and production patterns"
13. Climate Action  
"Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy"

**QUALITY DEVELOPMENT FOR SUSTAINABILITY GOVERNANCE****14. Life below Water**

“Conserve and sustainably use the oceans, seas, and marine resources for sustainable developments”

**15. Life on Land**

“Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.”

**16. Peace, Justice, and Strong Institutions**

“Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.”

**17. Partnership for the Goals**

“Strengthen the means of implementation and revitalize the global partnership for sustainable development.”

Indonesia shows a firm commitment to support and implement various programs to achieve these sustainable development goals in accordance with the available capabilities. The formulations of sustainable development goals are more open to opportunities for private corporations and SOEs to participate in supporting the achievement of global development goals, as in the undertaken business activities.

We see that our business activities can also support the achievement of sustainable development goals, as our products are one of the main needs of all levels of society while meeting environmentally sound development principles. We identify the Company's activities at least in accordance with the seven (7) SDGs, namely:

- Goal 1      - No Poverty
- Goal 3      - Good Health and Well-Being
- Goal 6      - Clean Water and Sanitation
- Goal 7      - Affordable and Clean Energy
- Goal 8      - Decent Economic Growth and Work
- Goal 13      - Climate Action
- Goal 15      - Life on Land

Therefore, we are determined to improve the competence at all levels and operational and financial performance, as the achievement of the global development goals is aligned with the effort to fulfill the expectations of all stakeholders as the main principles of achieving sustainable business development.



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#### **Statement GRI Standards In Accordance Check**

The National Center for Sustainability Reporting (NCSR) has conducted a GRI Standards in Accordance Check on the Star Energy Geothermal (Wayang Windu) Ltd. Sustainability Report 2016 ("Report"). The check communicates the extent to which the GRI Standards criteria has been applied in the Report. The check does not provide an opinion on the sustainability performance of the reporter or the quality of the information provided in the report.

We conclude that this Report has presented disclosures, either fully or partially, in accordance with GRI Standards - Core Option.

Jakarta, December 2017

National Center for Sustainability Reporting



**Dewi Fitriasari, Ph.D., CSRA, CMA**  
Director

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2	<b>Zero Hunger</b> - <i>End hunger, achieve food security and improved nutrition, and promote sustainable agriculture</i>	n.a
3	<b>Good Health and Well-Being</b> - Ensure healthy lives and promote well-being for all at all ages.	92
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## FEEDBACK FORM

Thank you for reading this 2016 Sustainability Report. To improve future Sustainability Reports in the coming years, we hope that you will complete this Feedback Form and return it to us.

1. This Sustainability Report has provided information on various activities implemented by Wayang Windu to fulfill its corporate social responsibility.  
 Agree    Don't Know    Disagree
2. The material included in this Sustainability Report, including the data and information, is presented in a way that is easy to understand.  
 Agree    Don't Know    Disagree
3. The material included in this Sustainability Report, including the data and information, is complete.  
 Agree    Don't Know    Disagree
4. The material included in this Sustainability Report, including the data and information, is accountable.  
 Agree    Don't Know    Disagree
5. The material included in this Sustainability Report, including the data and information, is accountable.  
 Good    Don't Know    Poor

6. What information do you think was useful in this Sustainability Report?  
 ....  
 ....  
 ....

7. What information do you think was not useful in this Sustainability Report?  
 ....  
 ....  
 ....

8. What information do you think was incomplete and could be improved in future Sustainability Reports?  
 ....  
 ....  
 ....

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### Stakeholder Identification (choose one):

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- Academic • Media • Community
- Other, please state  
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