

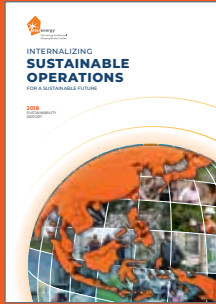
# INTERNALIZING **SUSTAINABLE OPERATIONS**

FOR A SUSTAINABLE FUTURE

**2018**  
SUSTAINABILITY  
REPORT







# INTERNALIZING SUSTAINABLE OPERATIONS

FOR A SUSTAINABLE FUTURE

With this theme, we seek to deliver a clear message to readers about how Star Energy Geothermal Wayang Windu Ltd is highly committed to the sustainability of the earth and all its contents through the implementation of various programs in the environmental, social, and economic development of the community across our operational areas. In this, we always do our best to carry out operations in a consistent and well-planned manner, linked with evaluation programs.

The realization of these programs has given concrete results, among others, more efficient operations, lower level of carbon dioxide gas emissions from our operational activities, as well as decreasing waste that pollutes the environment. On the other hand, the quality of the environment is getting better, as shown by the increasing area of re-vegetation and well-preserved habitat for flora and fauna. Another key highlight is the improving socio-economic welfare of the surrounding community, thanks to the growing nature tourism-based economic potential that strongly contributes to the increase in the people's income, as well as the preservation of the surrounding environment.

The Company's success in receiving Gold PROPER award in 2018 for three consecutive years since 2016 is indeed an accolade that we are proud of and which affirms the determination of the employees at all levels of the organization to continuously run the operations by upholding the attainment of various Sustainable Development Goals (SDGs), namely to promote best performance which is balanced in terms of economic, environmental and social matters.



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# Summary of Sustainability Performance





# Environment

- The achievement of Gold PROPER in 2018, for three consecutive years, namely 2016, 2017 and 2018. SEGWWL first earned Gold PROPER award in 2007, as well as in 2012 and 2014.
- Realization of environmental protection and monitoring programs.
- Active participation in reducing global carbon emission through the implementation of Clean Development Mechanism (CDM) program.
- Design engineering and energy optimization as part of conservation and energy efficiency efforts.
- Implementation of non-B3 waste reduction program through the composting of organic waste and oil analysis to reduce used oil waste generation (LB3) of geothermal power plant.
- Implementation of re-vegetation of degraded land as part of participation in biodiversity conservation, environmental improvement, and landslide risk mitigation programs while providing economic value to the community. In 2018, we planted 1,870 trees, thus since 2002-2018, we have planted a total of 628,925 trees.
- Implementation of "Cinta Bakti Negeri" program to involve the community in environmental improvement program, which is to balance improvements in social-community life, welfare, as well as environmental condition and preservation.

# Community Development

- Supporting the improvement of Nurkayana SMEs Cooperative's activities.
- Supporting the improvement of Smart House activities with several programs, among others, A, B and C learning group package, sewing training, and preparation of National Standard School Examination (USBN) and Computer-based Test (UNBK).
- Providing scholarships for 1,503 students at the elementary, secondary, and high school level and for 2 university students of the D2-D4 Program.
- Realizing various infrastructure developments in rural areas around the operational area.
- Supporting the development of TBM (Reading studio) Kertamanah facility and infrastructure as a place to carry out literacy and independence programs - "Green Economy Saba Desa".
- Driving the growth and development of Integrated Pangalengan Tourism potential through the development of the eco-tourism Cinta Bakti Negeri program, Ecotourism of Java Preanger Field Camp with the Ambeu Coffee Preanger Community, and other related programs.
- Supporting the development of Oyster Mushroom cultivation potential in cooperation with Villa Mushroom Agrifarm.





# Economic

- Supporting the Government of the Republic of Indonesia to attain its target in increasing electricity contribution from renewable-energy power plants (EBT).
- Conducting periodic performance evaluation programs for all supplier partners.
- Supporting the increase of regional own-source revenue (PAD) and supporting the development of basic infrastructure in the regions.

# Human Resources

- Implementing periodic training programs to improve employee competency and performance.
- Realizing performance assessment of all employees and promoting job promotions to outstanding employees.
- Striving to meet the expectations of employees as one of the main stakeholders of the Company.







# Safety

- Improving safety culture in line with the increase in target of number of man-hours without lost work-time.
- Recording a decrease in the number of workplace accidents.
- Realizing all health counseling and prevention activities for employees.

# Quality Improvement of the Company's Management System

- Dissemination and Implementation of Code of Ethics.
- Improving the quality of "Wayang Windu Integrated Management System" implementation that includes ISO 14001: 2015, ISO 9001:2015, OHSAS 18001:2007, SMK3 and ISO/IEC 17025:2017 which is complemented with ISO/IEC 17025:2017 certification, laboratory competency requirement standard.



# Awards

1. Gold title in the Company Performance Rating Program (PROPER) in Environmental Management for the 2016, 2017 and 2018 Period from the Ministry of Environment and Forestry of the Republic of Indonesia.
2. Gold title in the Energy Category in the Sustainability Report Award 2018 from The National Center for Sustainability Reporting (NCSR).
3. Ranked 2nd in the ASEAN Red Ribbon for Outstanding Workplace (ARROW) 2018 in the category of HIV and AIDS Awareness and Control Program.
4. Award as the National-level Champion of Pioneering Partner of Rural Library 2018 in the Literacy Festival of Bandung Regency.
5. Subroto Award 2018 in Energy Efficiency from the Ministry of Energy and Mineral Resources of the Republic of Indonesia.
6. Subroto Award 2018 - ADITAMA Category in Geothermal Environment from the Ministry of Energy and Mineral Resources of the Republic of Indonesia.
7. Subroto Award 2018 - ADITAMA Category in Geothermal Occupational Health and Safety from the Ministry of Energy and Mineral Resources of the Republic of Indonesia.
8. Zero Accident Award 2018 from the Ministry of Manpower of the Republic of Indonesia.
9. P2-HIV and AIDS at Workplace Program Award 2018 in Platinum Category from the Ministry of Manpower of the Republic of Indonesia.
10. The 7th Best Social Business Innovation Company award 2018 in the Energy Category from Warta Ekonomi.
11. Green CEO 2018 award from Warta Ekonomi.

# Certifications

Certification	Assesor	Certification Year
ISO 14001:2015	Lloyds Register Quality Assurance (LRQA)	2018-2021
OH SAS 18001:2007	Lloyds Register Quality Assurance (LRQA)	2018-2021
ISO 9001:2015	Lloyds Register Quality Assurance (LRQA)	2017-2020
ISO/IEC 17025:2017	KAN	2019-2022
SMK3		2018-2021

# Awards and Certifications





# Sustainability Event Highlights



**JANUARY**

Supporting and participating in SATAPOK program, namely Citarum Upstream River Revegetation Program as part of the programs of Bandung Government, January 27, 2018.



**FEBRUARY**

Audit of OHS aspects of WIP Project in the Field.



**MARCH**

Inauguration of Citarum River Restoration Program by the Ministry of Forestry and the Environment (Ekoriparian), Bandung, March 9.



**APRIL**

Commemoration of Earth Day through OHS Discussion and Mass Cleaning Activity at the Permanent Villa, April 27, 2018.



**MAY**

Reward "9 Million Safe Man-Hours without LTI" Reward at Bright Star Room, May 28, 2018.



**JUNE**

Assessment (Audit) of the completeness of OHS aspects by EBTKE as part of programs preceding Subroto Award, June 28-29 at Wayang Windu Field.



JULY

Inauguration of Leuweung Citere Reservoir Restoration Program, July 27, 2018.



AUGUST

Receipt of P2-HIV and AIDS at Workplace Program Award 2018 in Platinum Category & Zero Accident Award 2018 from the Ministry of Manpower of the Republic of Indonesia, August 9, 2018.



SEPTEMBER

Receipt of Subroto Award 2018 in ADITAMA Category for Geothermal Environmental Protection and Geothermal Health and Safety 2018 as well as in Energy Efficiency 2018 from the Ministry of Energy and Mineral Resources, September 28, 2018.



NOVEMBER

Receipt of ASEAN Red Ribbon for Outstanding Workplace (ARROW) Award 2018, Ranked 2nd in the Category of HIV and AIDS Awareness and Control Program, November 21-22, 2018, Kuala Lumpur.

DECEMBER

Receipt of Gold Award in the Energy Category of Asia Sustainability Reporting Rating 2018 from The National Center for Sustainability Reporting (NCSR), December 8, 2018.

Receipt of Gold title in Company Performance Rating Program (PROPER) in Environmental Management for the 2017-2018 Period from the Ministry of Environment and Forestry of the Republic of Indonesia (KLHK), December 27, 2018.



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**HENDRA SOETJIPTO TAN**  
Chief Executive Officer

# Remarks from the CEO [GRI 102-14]

WE ARE HIGHLY COMMITTED TO SUSTAINABILITY THROUGH THE IMPLEMENTATION OF VARIOUS PROGRAMS IN THE ECONOMIC, SOCIAL, AND ENVIRONMENTAL FIELDS. WE BELIEVE THAT ALL OF THE PROGRAMS HAVE ALIGNED WITH SUSTAINABLE DEVELOPMENT GOALS (SDGS).

THE ACHIEVEMENT OF GOLD PROPER AWARD FOR THREE CONSECUTIVE YEARS, NAMELY 2016, 2017 AND 2018, IS INDEED AN ACCOLADE THAT WE ARE PROUD OF AND WHICH AFFIRMS OUR DETERMINATION TO BE MORE ACTIVE IN CARRYING OUT SOCIAL RESPONSIBILITY PROGRAM THAT IS IN LINE WITH SDGS.

Esteemed Stakeholders,

All praise is due to the Almighty God and may His mercy and blessings be bestowed upon us all, as for His grace the Company succeeded in achieving an impressive performance in 2018. This year, Wayang Windu continued to fully operate and help support – as always – the Government in achieving its target to realize Indonesia as one of the world's largest geothermal power producers.

We support national economic development through continuity of electricity supply. Even more, the Company has also successfully implemented a wide range of social responsibility programs as a concrete manifestation of our commitment in supporting the achievement of sustainable development goals.

## SUPPORTING THE ACHIEVEMENT OF SUSTAINABILITY DEVELOPMENT GOALS

As we pay high attention to the concerns of the global community on sustainability issues and considering our role as one of the global corporate citizens, Star Energy Geothermal (Wayang Windu) Limited is increasingly determined to take full participation in the attainment of Sustainable Development Goals (SDGs). We also support the Government of Indonesia's initiatives in achieving the commitment to reducing GHG emissions as part of the Paris COP implementation.

As a company that manages renewable energy sources, in this case geothermal, we believe that the company has a great potential to contribute optimally to the achievement of the aforementioned target of reducing GHG emissions.

Therefore, we are determined to optimize the Company's close and well-established relationship with stakeholders so that these common goals can be well achieved. At the end, with the support of stakeholders, the Company is expected to be able to demonstrate its consistency in balancing its economic, social, and environmental performance as part of the realization of sustainable development goals.

## SUPPORTING THE ACHIEVEMENT OF NATIONAL DEVELOPMENT GOAL

We have consistently supported the Government of Indonesia's efforts in optimizing geothermal potential while contributing to the increase in economic growth rate through the implementation of various programs of the Company in the economic field. We strive to optimize geothermal potential by increasing the efficiency of operational activities while developing geothermal potential in other areas carried out by Business Group, including maximizing the engagement of SEGWWL experts in the development program. Aside from serving as an energy source for electricity generation, geothermal also has another advantage, namely to reduce CO<sub>2</sub> emissions from conventional power plants. As we all know, Indonesia is committed to reducing CO<sub>2</sub> emissions

by up to 29% on its own or up to 40% with the support of developed countries. Among the efforts undertaken to achieve these objectives is through optimization of geothermal and re-vegetation of degraded land and improvement of quality of tropical forest ecosystem.

In addition to the supply of environmentally friendly electricity, we support the achievement of national development goals through the distribution of economic value in the form of optimization of tax payment value, payment of fees and levies, involvement of local partners in the procurement of goods and services as well as the absorption of local workforce that allows increased regional own-source revenue (PAD). In addition, we provide entrepreneurship training for employees who are entering retirement period as well as supporting them with pension fund by paying the majority of the pension contribution obligations of permanent employees in the Company's pension program.

We also show high consistency in the implementation of the Community Economic Empowerment and Improvement Program through the provision of financial support and basic entrepreneurship training for individuals and cooperatives around managed areas so as to help the community optimize resources in the surrounding areas and translate them into products of economic value.

## ENSURING IMPROVEMENT OF ENVIRONMENTAL QUALITY

We have demonstrated great consistency in maintaining and improving the quality of the surrounding environment through the realization of two main programs, namely improving the quality of eco-friendly operational activities and implementing environmental conservation programs together with the surrounding community.

We strive to improve the quality of environmentally friendly operational activities through the implementation of various innovative programs to increase energy efficiency, reduce greenhouse gas (GHG) emissions, manage waste based on 3 R (reduce, reuse, recycle), undertake water conservation



program, and extend emission reduction program using the Clean Development Program (CDM) scheme in order to optimize the accumulation of CO2 reduction recorded in Certified Emission Reduction (CER).

We also continuously strive to improve the value of energy intensity from operational activities to allow Wayang Windu to become one of the geothermal power plants with the best energy intensity performance in the world.

In order to enhance the quality of the surrounding environment, we intensify revegetation and land rehabilitation activities by involving the surrounding community and cooperating with universities and Perhutani as one of the main stakeholders. We intentionally engage the community in hopes of reducing conflict of interest risk when it comes to

fulfilling economic needs. Through community engagement in the improvement of environmental quality, we contribute to promote the development of the ecotourism potential so that it can constantly grow in a healthy manner and ultimately offer great economic benefit to the community so as to benefit from the increasingly maintained environmental conditions. One example of this community engagement is the implementation of Cinta Bakti Lestari Program as part of Citere Reservoir Restoration program in collaboration with Pecinta Alam Penelusur Belantara Tapak Tiara (PAPB Tapak Tiara).

As part of the realization of the revegetation and rehabilitation program, we have also periodically implemented a flora and fauna monitoring program in the surrounding managed areas to increase environmental quality.

## IMPROVING SOCIAL LIFE QUALITY OF THE SURROUNDING COMMUNITY

We are strongly committed to improving the quality of people's lives through the implementation of various corporate social responsibility activities which consist of four main program areas, namely: Education, Environment and Health, Economy and Rural Development, by engaging the surrounding community as the program subject. We carry out various activities, including: developing formal and non-formal education, providing scholarships, repairing basic infrastructure, building local/district government infrastructure facilities, smart home facilities, building places of worship, realizing community health improvement programs such as building maternal centers (posyandu) and implementing related healthcare programs, as well as economic empowerment.

The ultimate goal of the program is to increase Human Development Index (HDI) in the managed areas. An increase in HDI indicates an increase in the community's welfare.

In the community empowerment program, aside from supporting the development of Nurkayana small and medium business cooperatives, we have intensified the implementation of synergy programs to balance between economic growth interests and environmental quality improvement with the aim of growing ecotourism potential while optimizing the surrounding natural environment conditions. In addition to the aforementioned Cinta Bakti Lestari Program, we fully support the optimization of land use through the development of coffee plantation with intercropping system, as well as supporting the growth of coffee business and coffee tourism communities, such as establishing of Ambeu Kopi and Coffee Cultuur communities, and the like.

Other than coffee intercropping plantation, we also support the development of other economic potentials from the mountainous climate conditions in Pangalengan, namely the cultivation of environmentally friendly oyster mushrooms, in partnership with Villa Mushroom Agrifarm. Through this mushroom cultivation, farmers in Pulosari Village are able to

earn additional income while increasing the environmental quality through the use of baglog oyster mushroom waste as fertilizer and an autoclave to produce baglog as a medium for growing oyster mushrooms.

For various environmental program initiatives and innovations in community economic empowerment programs that are in synergy with the improvement of environmental quality goal, SEGWLL was again awarded Gold PROPER in 2018. This is for the third consecutive time that the Company has received Gold rating after being awarded in 2016 and 2017. We deserve to be proud and grateful, considering that three consecutive awards are very rare achievements that now lead the Company to become one of the role models for various medium and large scale companies in the management of social responsibility programs that integrates well the achievement of economic, social and environmental goals in a balanced manner.

## OUTLOOK

We will exert every effort to fully utilize renewable energy sources potential in managed area of Wayang Windu in the upcoming years according to a blueprint for the development of renewable energy from PT PLN as the government's power generation company that leads electricity industry nationally. Indonesia's geothermal energy potential equals to 29,544 MW, while there are only 1,438.5 MW or 4.9% of it that have been utilized through geothermal power plant (PLTP). The Government of Indonesia (through PLN) is targeting an increase in the contribution of the new and renewable energy mix (including geothermal) from 12.5% of the total national electricity production in 2017 to 23% by the end of 2025.

On the other hand, in terms of community empowerment and environmental quality improvement, the Company is fully committed to further increasing the development of ecotourism potential that is able to combine the environmental preservation interest and economic potential from the beauty and natural preservation of Pangalengan environment and its surroundings.

## CONCLUSION

Finally, I would like to thank all stakeholders and shareholders who have worked together with Wayang Windu to support the achievement of a wide range of sustainability achievements in 2018.

We also wish to express our highest appreciation to all employees for the dedication and hard work that they have shown in supporting efforts to improve the entire company's infrastructure and restore operations as normal in accordance with the set schedule, and further to go side by side to accomplish sustainable development goals.

Moreover, we invite all individuals of the Company to go the extra mile in capitalizing on business growth opportunities in 2019 and beyond while continuously upholding respect to the stakeholders' rights as fundamental for achieving sustainable business growth.

Jakarta, June 2019



**Hendra Soetjipto Tan**  
Chief Executive Officer

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# About Star Energy Geothermal (Wayang Windu) Limited





AS ONE OF THE COMPANIES MANAGING A GEOTHERMAL FIELD WITH PROVEN EXPERIENCE IN GEOTHERMAL POWER PLANT MANAGEMENT, SEGWWL IS FULLY COMMITTED TO SUPPORTING THE IMPROVEMENT OF RENEWABLE ENERGY USE PROGRAM IN ORDER TO INCREASE THE QUALITY AND MIX OF NATIONAL ELECTRICITY ENERGY SOURCES WHILE AT THE SAME TIME SUPPORTING COMMITMENT TO CARBON DIOXIDE EMISSION REDUCTION AS A FORM OF THE GOVERNMENT'S COMMITMENT TO THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS (SDGS)

## Brief Profile

### COMPANY NAME

Star Energy Geothermal (Wayang Windu) Limited

[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 [GRI 102-3]

Wisma Barito Pacific, Star Energy Tower

3<sup>rd</sup>, 8<sup>th</sup>-11<sup>th</sup> Floor

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Tel : +62 21 8522 0000

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www.starenergy.co.id

### OPERATIONAL AREA

Desa Marga Mukti, Pangalengan, West Java

[GRI 102-4]

### SHAREHOLDING

Star Energy Geothermal Pte Ltd (d/h Star Energy

Holdings Pte Ltd 100%) [GRI 102-5]

### LEGAL STATUS/BASIS

National Investment [GRI 102-5]

### MEMBERSHIP IN ASSOCIATIONS [GRI 102-13]

API (Indonesian Geothermal Association)

MKI (Indonesian Electrical Power Society)

Indonesian Renewable Energy Society (METI)

### BUSINESS GROUP

SEGWWL does not have any subsidiaries [GRI 102-45]

# Vision, Mission and Corporate Values

## VISION

TO BE THE LARGEST AND LEADING  
GEOTHERMAL COMPANY IN THE WORLD

## MISSION

WE ARE AIMING TO MANAGE AND OPERATE  
1200 MW OF GEOTHERMAL POWER PLANT BY 2028

WE STRIVE TO ACHIEVE OPERATIONAL  
EXCELLENCE AND TO BE THE MOST EFFICIENT IN  
COST AND CAPITAL MANAGEMENT, BY DEPLOYING  
THE BEST TECHNOLOGY

WE ASPIRE TO BE A GREAT COMPANY THAT IS  
AN EMPLOYER OF CHOICE AND A LONGTERM  
SUSTAINABLE PARTNER TO OUR STAKEHOLDERS



## CORPORATE VALUES [GRI 102-16]

SEGWWL has formulated and strived to instill 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 STAKEHOLDER

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 bussiness 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 efficiency
- 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



## DISSEMINATION AND EFFORTS TO ACHIEVE THE COMPANY'S VISION AND MISSION

In order to ensure the achievement of the established vision and mission, we periodically internalize the company's vision and mission to all employees through various approaches. Internalization of this vision and mission is conducted through various means, such as new employee orientation, employee performance evaluation, in-house training, and various information media. Occasionally, in-house training can also become an effective tool that we use to disseminate the company's vision, mission and values.

## IMPLEMENTATION OF VALUES IN SOCIETY

One of the corporate values that all individuals of Wayang Windu hold is to respect other people and to create "win-win" partnership from which every stakeholder receives

the benefit. We internalize these values not only in the Company's internal environment, but also for the interest of the community in the vicinity of our operational areas. Strategically, we show our awareness through the following efforts: GHG (greenhouse gas) reduction, responsible environment management, community development, and by encouraging substantial improvements in the community around SEGWWL operational site.

## STAR ENERGY GEOTHERMAL (WAYANG WINDU) LIMITED AT A GLANCE

Star Energy Geothermal (Wayang Windu) Limited, 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, Desa Margamukti, 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 Wayang Windu geothermal power plant Unit 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 19% of Indonesia's geothermal power market share in the Java-Bali power system.

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 up until 2017 reached 27 production wells, and 3 reinjection wells. SEGWWL seeks to continuously increase power generation capacity by striving to obtain steam that can deliver optimum result.

Indonesia's geothermal potential is one of the largest in the world. Star Energy Geothermal (Wayang Windu) Limited (SEGWWL) develops the potential of geothermal energy to meet the increasing energy needs. Therefore, we strive to optimize the management of geothermal fields of 227 MW in the Pangalengan area while continuously exploring geothermal energy potential in other regions to achieve the goal of being a geothermal power plant operator of 1,200 MW by 2028.

# Company 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

**1996**

Proven energy  
reserves for  
220 MW'

**December 1994**

JOC and ESC  
signing

**1999**

**August 1999**  
Completion  
of Unit 1  
construction

**2000**

**May 2000**  
Commissioning of  
Unit 1  
**June 2000**  
Commercial operation  
of Unit 1

**2001**

**January 2001**  
Operation  
takeover by Unocal  
Management

**1997**

Proven energy reserves  
for 440 MW

**June 1997**

EPC contract signing  
with Sumitomo  
Corporation

**2006**

Completion of  
ESC and JOC  
amendment

**2007**

EPC contract signing  
with Sumitomo  
Corporation  
for Unit 2  
development

**2008**

**February 2008**  
The Company's name  
changed from MNL to  
Star Energy Geothermal  
(Wayang Windu) Limited

**December 2008**  
Commissioning of  
Unit 2

**2004**

**November 2004**  
Star Energy  
Acquired  
100% share

**2009**

**March 2009**  
Commercial Operation of Unit 2

**2012**

**December 2012**  
Settlement of Well Intervention Program

**2013**

**March 2013**  
Roll Out of Wayang Windu Integrated Management System (WIMS) with the support of Document Management System (Doms Doc)

**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**

Completion of reinstatement work after landslide

**2016**

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

**2017**

WW-A7 well work over implementation and well intervention program (WIP) activities. WIP activities are carried out to maximize production capacity from existing wells

**2018**

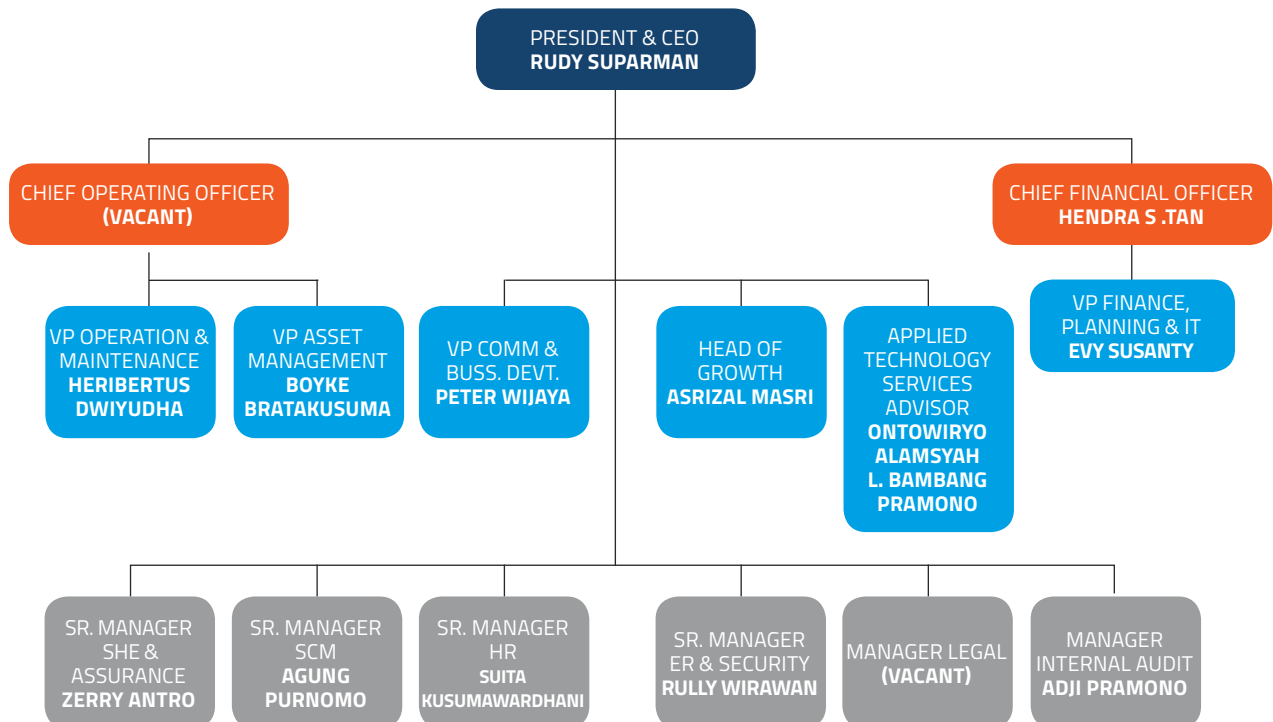
Implementation of "make up" well drilling activity in 2018

## COMPANY SCALE [GRI 102-7]

Description	Period				
	2014	2015	2016	2017	2018
Total Employees (Permanent & Non Permanent)	219	223	228	179	<b>193</b>
Total Capitalization (US\$ thousand)					
- Debt	497,992	509,237	541,134	768,675	<b>738,262</b>
- Equity	50,834	44,887	94,350	85,456	<b>131,813</b>
Quantity of Products Sold (GWH)	1,847	1,110	1,925	1,910	<b>1,896</b>
Total Assets (US\$ thousand)	548,826	554,124	635,484	854,131	<b>870,075</b>
The Number of Fields Operated	1	1	1	1	<b>1</b>
Sales (in thousand US\$)*	117,158	68,882	165,007	181,689	<b>181,724</b>

Note: Excludes carbon credit sales

## ORGANIZATIONAL STRUCTURE

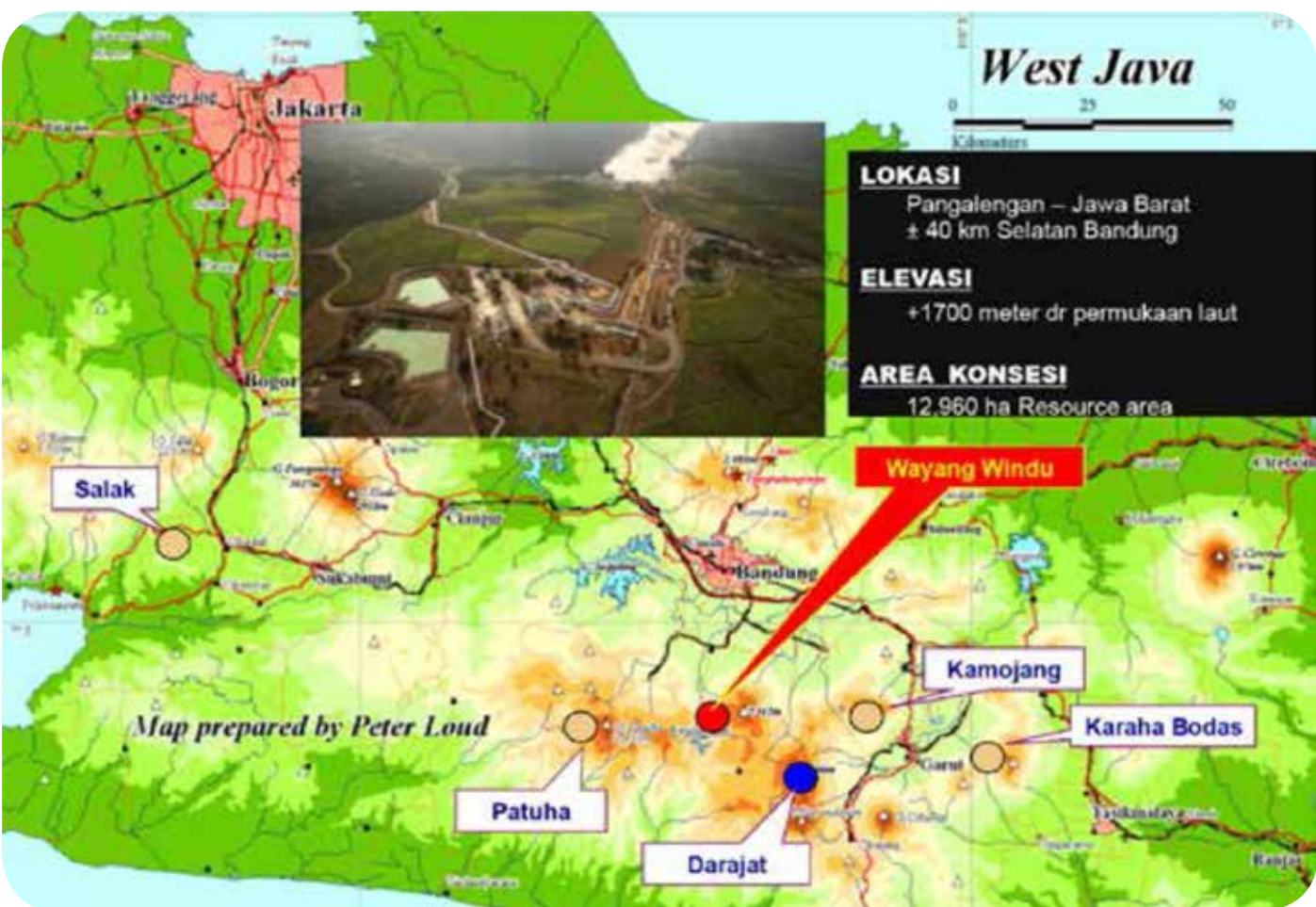




## OPERATIONAL MAP OF THE COMPANY [GRI 102-6]

Operational activities of SEGWWL take place in the mountain area of Pangalengan Subdistrict, Bandung Regency, West Java, which is also known as Wayang Windu geothermal block that is named after two mountains in the area, namely Wayang and Windu. Our operational 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 27 production wells, and 3 re-injection geothermal steam wells. Our customer is PLN.



## SUPPLY CHAIN [GRI 102-9]

The Company's production activities are supported by various goods and services which are classified into several big categories such as:

- Goods and services for operational activities and maintenance, such as petroleum, lubricant, chemical substances, etc.
- Goods and services supporting operation and maintenance.
- Stationery and other daily needs.

Considering the importance of goods and services supply for operational process and maintenance, the Company applies strict monitoring and evaluation procedures for the suppliers. These procedures include monitoring of goods quality, special expertise of the employees being supplied, suppliers' credibility, etc. Especially for stationery and other daily needs, suppliers usually come from our surrounding operational site.

The suppliers are subject to various indicators of evaluation and shall fulfill requirements and regulations according to the types of goods and services being procured. Among the highlighted requirements are human rights compliance, governmental regulation on labor, environmental regulation compliance, etc.

As of the end of December 2018, it is recorded that there were 2,861 (2017:2,767) Wayang Windu suppliers of goods and services. However, only 720 vendors (2017:641) were recorded as active for the period of January 2010-December 2017. The following diagram describes the flow of SEGWWL supply chain.

### SUPPLY CHAIN DIAGRAM – WAYANG WINDU



## SEGWWL Management System

Star Energy Geothermal (Wayang Windu) Limited (SEGWWL) is an energy company that aspires to become the fastest growing company in Indonesia, committed to the highest standards of occupational safety, health, the environment and quality (K3LK), including the performance of assets and energy.

To demonstrate its commitment to the fulfillment of best performance in OHS, Environment and Quality, SEGWWL has implemented an integrated management system which consist of:

- Quality Management System (ISO 9001:2008), obtained since 2014 and renewed to ISO 9001:2015 in 2017.
- Environmental Management System (ISO 14001:2004), obtained since 2006 and renewed to ISO 14001:2015 in 2016.
- Occupational Health & Safety Management System (OHSAS 18001:2007), obtained in 2007.
- Occupational Health & Safety Management System (SMK3 - Decree of the Minister of Manpower and Transmigration of RI), obtained in 2016.
- ISO/IEC 17025:2008 General requirements for testing and calibration laboratory competencies, obtained in 2018.

The Integrated Management System with Environment, Occupational Safety and Health is a combination of several standards related to the overall management system which includes the organizational structure, planning, responsibilities, implementation, process procedures and resources needed to develop the implementation, achievement, review and maintenance

of quality policy, the environment, occupational safety and health in order to control risks related to work activities to create a safe, efficient and productive workplace.

The integrated management system implemented throughout the SEGWWL environment aims to ensure that the company can meet its standards and performs its duties to achieve the company's goals. With this system, SEGWWL can carry out its business activities with full responsibility and minimize the risk of accidents, injuries, occupational diseases, pollution, and asset damage in accordance with the applicable regulations and standard requirements at both a national and international level.

To improve product and service quality, SEGWWL applies ISO 17025:2008 certificate of competency requirements for laboratories. SEGWWL succeeded in obtaining ISO 17025:2008 certificate in December 2018, which is planned to be upgraded to the newest version, namely ISO 17025:2017 in 2019.

In addition, SEGWWL is also preparing for energy management system certification that refers to ISO 50001, which is a management system standard to establish system and processes needed to enhance energy management performance, including efficiency, use and consumption of energy.

The achievement of the international operational standard certificates above shows the commitment of SEGWWL to run an integrated management system with international standards.

3

# Commitment to Environmental Preservation, Commitment to Sustainability



MORE THAN JUST TO FULFILL OBLIGATIONS, THE COMPANY IMPLEMENTS VARIOUS ENVIRONMENTAL PRESERVATION AND QUALITY IMPROVEMENT PROGRAMS WITH HIGH COMMITMENT. WE EVEN CARRY OUT ENVIRONMENTAL IMPROVEMENT PROGRAM BY ACTIVELY ENGAGING THE COMMUNITY AND RELATED STAKEHOLDERS WHILE CONTINUOUSLY PAYING ATTENTION TO THE BENEFIT FOR THEIR WELFARE AND MAKING THEM PART OF THE ENTIRE PROGRAM WHICH IS RUN FOR ONE GOAL: SHOWING THE COMPANY'S COMMITMENT TO SUSTAINABILITY.

DUE TO THE COMMITMENT, CONSISTENCY IN THE PROGRAM IMPLEMENTATION, STAKEHOLDER ENGAGEMENT, AND THE RESULTS SHOWN, WAYANG WINDU SUCCESSFULLY OBTAINED GOLD PROPER AWARD FOR THREE YEARS IN A ROW – BRINGING THE COMPANY TO BE THE ROLE MODEL FOR MANY REPUTABLE COMPANIES IN INDONESIA.

## BACKGROUND, PURPOSES AND OBJECTIVES [GRI 103-1, GRI 103-2]

At present, the governments of both developed and developing countries are intensifying cooperation to cut down the volume and intensity of CO2 emissions through various programs aimed at reducing emissions from industrial activities and transportation as well as initiatives and support for the preservation of natural forests in both tropical and subtropical regions to allow optimum CO2 absorption in the photosynthesis process. These efforts are now part of a global sustainable development agenda as set out in the 17 Sustainable Development Goals

(SDGs) established and approved by no less than 197 countries that are members of the United Nations, which were implemented starting from 2015-2030.

Global initiatives in the SDGs reinforce Kyoto Protocol, which binds 37 of the world's major industrial countries to jointly reduce the amount of CO2 emissions by introducing the following 3 GHG reduction financing mechanisms for developing countries where natural forest areas are dominantly located:

- 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 formed to act as a monitoring agency and organizer of the above mechanism.

Indonesia has committed to reducing greenhouse gas (GHG) emissions by 2020 by 29 percent on its own compared to the figure of the business-as-usual baseline, and by 41 percent with international support as outlined in the SDGs initiative. As a form of commitment to participation in supporting the achievement of development goals in the SDGs, the Government of Indonesia has issued Presidential Regulation (PerPres) No. 59 of 2017 concerning "Implementation of Sustainable Development Goals Achievement". Through this regulation, the governments at all levels, both central and regional, are expected to be able to synergize and optimize the management of all available resources in order to efficiently support the achievement of various development goals in the SDGs.

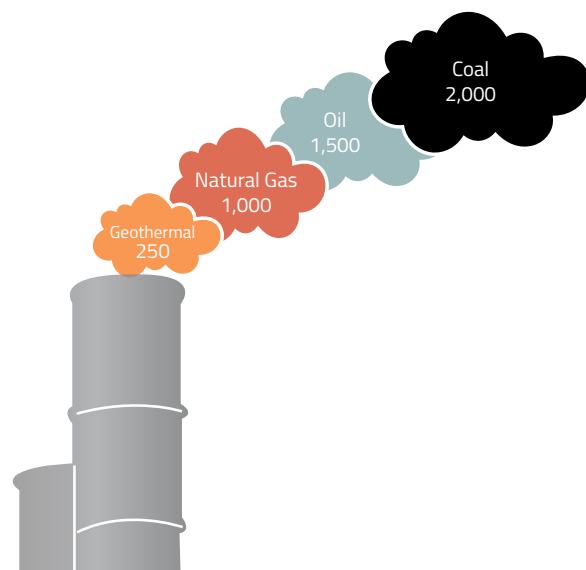
Presidential Regulation No. 59 also emphasizes the need to formulate a National Action Plan (RAN) for Sustainable Development Goals (TPB/SDGs) - RAN TPB, and Regional Action Plan (RAD) for Sustainable Development Goals (TPB/SDGs) - RAD TPB, a document that sets out 5-year programs and work plan for the implementation of various activities that directly and indirectly support the achievement of SDGs in accordance with national and regional targets. As part of the implementation of the RAN TPB and RAD TPB programs, at the beginning of the fourth quarter of 2018, the Ministry of Finance declared **SDG Indonesia One**, a work plan platform to realize the implementation of various efforts that could be made to support the achievement of the formulation of objectives in the SDGs.

As part of the business community in Indonesia and global citizens, Star Energy Geothermal (Wayang Windu) Limited (SEGWWL), is committed to participating in this joint effort

by optimizing the potential of CO2 emissions reduction from operational activities of managed Geothermal Power Plant (PLTP). Geothermal energy, as one of renewable energy types, has enormous potential to contribute to the reduction of greenhouse gas (GHG) emissions, especially CO2 (carbon dioxide) gas. For each lbs/MW-hr unit, the level of GHG emissions from PLTP generators is the lowest compared to other types of power plants, as shown in the following table summary.

Type of Power Generation	Type of Energy Source	Emission Unit	Total Equivalents of CO <sub>2</sub> Emission
PLTP / Geothermal power plant	Geothermal	Lbs/MW-hr	250
PLTGU / Steam and gas power plant	Gas	Lbs/MW-hr	1,000
PLTU / Steam power plant	Crude oil	Lbs/MW-hr	1,500
PLTU / Coal-fired power plant	Coal	Lbs/MW-hr	2,000

### Comparison of CO2 Emission between Power Generation Energy Sources (Lbs/MW/Hr)



In order to maximize the potential of the greenhouse gas reduction from PLTP operations, SEGWWL realizes various environmental management programs and environmentally friendly operations. These programs are made to achieve two main objectives, namely:

- To maintain and restore environmental sustainability to support long-term operations of geothermal power plants.
- To demonstrate participation in energy and water conservation, greenhouse gas emissions reduction, reduction and use of hazardous and toxic (B3) and Non-B3 waste and biodiversity protection.

## COMMITMENT AND POLICY

[GRI 103-3]

The Company's commitment to manage operations while preserving the environment is set forth in the "SHE Corporate Policy", which broadly speaking is the Safety, Health and Environment (SHE) standard that applies in all levels of the organization and operational areas of SEGWWL only, considering that we do not have subsidiary. The Company's operational areas are managed in an environmentally friendly manner and built as a safe and comfortable workplace for each employee and the surrounding community. In its practice, this policy is carried out in various activities such as:

- Proactively preventing injuries and occupational diseases,
- Creating a safe work environment for every worker, contractor, and the surrounding communities,
- Implementing maintenance programs for business continuity
- Implementing energy efficiency through engineering and energy use policies.
- Reducing greenhouse gas (GHG) emissions.
- Saving water by executing water use policies.
- Managing B3 and non B3 waste with 3R (reduce, reuse, recycle) program, both independently and through cooperation with third parties.
- Protecting biodiversity.

The company believes that all of the above items of environmental policy are in line with the global sustainable development concept as outlined in the SDGs. Likewise, we are also optimistic that our eco-friendly operations that we perform along with environmental preservation programs, as we will outline in the following discussion, are also in line with the SDGs. The goals concerned are as follows:

- Item 6 - Clean Water and Sanitation - Ensuring the availability of clean water and sustainable sanitation for everyone.
- Item 7 - Clean and Affordable Energy - Ensuring access to affordable, reliable, sustainable, and modern energy sources for everyone.
- Item 13 - Action on Climate - Act quickly to combat climate change and its effects.
- Item 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, RESPONSE AND MITIGATION OF WAYANG WINDU TO IMPROVE ENVIRONMENTAL QUALITY [GRI 307-1]

As a form of commitment to environmental condition improvement efforts, the Company performs mitigation programs, as well as environmental improvement and management based on analysis of the impact of operational activities as stated in the following summary.

**Table of Environmental Impact of Wayang Windu Operational Activities**

Form of impact	Source of Impacts	Environmental Programs
Noise	Well tests, power plant operations	Installation of rock muffler, implementation of noise monitoring
	And cooling tower	Implementation of revegation around PS, S-1 and well pad
Water and soil pollution	Drilling activities, domestic activities, non-B3 and B3 waste, oil and diesel storage	Domestic wastewater treatment by installing wastewater treatment plants (IPLC)
		Secondary containment installation at fuel & oil storage locations
		Non hazardous waste disposal to approved landfill
Air pollution	Well tests, air conditioners, vehicle emissions and land clearing	Drilling and cutting waste utilization, referring to Energy and Mineral Resources Minister Regulation No. 21 of 2017
		Use of R-417a as a refrigerant cooling system that is more environmentally friendly
		Online well testing system implementation
Water Wastage	Support, maintenance, and drilling activities	To capture emission, H2S is flowed into water stored in a pond
		Filling up water basins of cooling tower from the adjacent unit at Unit 2 start-up
		Elimination of make up water inside cooling tower by the use of direct contact condenser
Biodiversity loss	Land clearing	Use of condenser to replace surface water during drilling process and fire pump testing
		Implementation of revegetation program in the PLTP operational area and critical environmental areas besides the operational area (including Perhutani or PTPN areas)
Traffic congestion	Moving tools and materials	Use of plant nursery and floriculture
		Scheduling transportation and movement of tools and materials
		Traffic control procedures, securing equipment/material transportation and cooperation with the police
		Infrastructure maintenance and repair of ring-road operational areas

To ensure our compliance with OHS standard work procedures and to meet all environmental requirements, we also carry out periodic performance screenings of potential partners and new contractors by enacting the Contractor Safety and Health Management System (CSMS). From the monitoring results in 2018, the CSMS did not find any non-compliance cases and therefore there were no monetary sanctions for non-compliance. **[GRI 307-1]**

## IMPACT OF CLIMATE CHANGE ON OUR BUSINESS ACTIVITIES

**[GRI 201-2]**

One of the real impacts of the disrupted atmospheric balance due to due GHG emissions (such as CO2, methane, freon and the like) is global climate change, including the occurrence of extreme weather in certain areas, such as prolonged summer



and high intensity rainy seasons. This condition can cause severe floods on land and landslides in mountainous areas.

Among the impacts of climate change that we undergo in the Company's operational areas is high rainfall, which causes landslides and erosions around business activity areas. Apart from high intensity of the rain, the conversion of forest areas into plantation areas that causes change in the surrounding ecosystem is also the cause of erosion, landslides, and floods in certain areas.

Through regular revegetation of critical areas, either on owned land or those of Perkebunan and Perhutani, SEGWWL strives to manage and protect the environment to mitigate the impacts due to climate change and land clearing.

## BIODIVERSITY

The topography of the SEGWWL mining area (WKP) of 12,960 Ha consists of mountains, valleys, and hills located at an altitude of about 1,700–2,000 m above sea level. The area is close to protected forests and production forests. The Company is aware that the exploration and exploitation activities of geothermal benefit the nation in general, yet on the other hand, also potentially alter biodiversity due to the development of production facilities and infrastructure in the protected forest areas. Therefore, to preserve the environment and biodiversity, we apply protective, proactive and environmentally friendly strategies, including:

- Listing the flora and fauna species.
- Implementing rules to limit the interaction of project staff with the habitats and species in the protected forest areas and revegetate our operational areas and the surroundings.
- Cultivating seeds in the Company's Nursery located at the project site.

### Biodiversity Program – Realization of Revegetation and Rehabilitation Program [GRI 304-3]

The Company has executed numerous programs aimed to preserve the environment around operational site as part of the efforts in mitigating negative impact potential from environmental damage, as detailed in the following description.

#### A. Revegetation of Degraded Land

Through revegetation, we restore and improve the quality of the environment and ecosystem to function properly by conducting replantation in lands of our operational area and its surrounding.

Throughout 2018, the trees planted included Sobsi, Jabon, Suren, Tahura (Nyatoh, Bayur Sulawesi, Salam, Huni, Binar, Ki Poho), Kawung/Pinang, Coffee, Ki Amis, Akar Wangi and fruit trees such as Sawo, Watery Rose Apple, Loquat, Guava and Oranges. 4,489 trees were planted in the additional land areas of 16.3 Ha. In total, from 2002 until the end of 2018, SEGWWL had planted 628,925 trees. The revegetation area is obtained from the estimated area of land planted with trees from the existing map. In accordance with the land allotment, the re-vegetation program is implemented in cooperation with related agencies such as PTPN VIII and Perhutani.

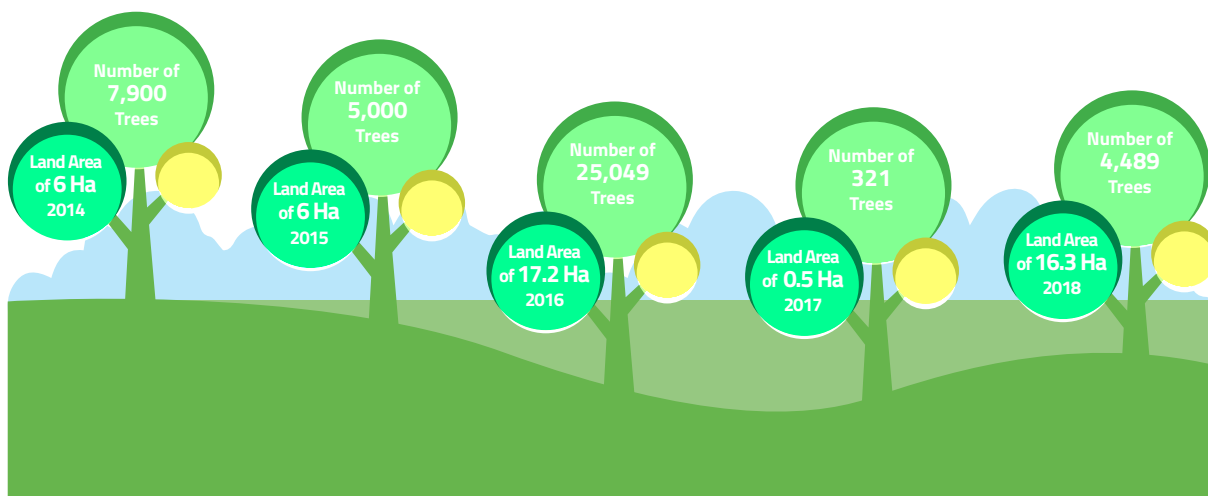
The tree planting activities are expected to mitigate the negative impact of greenhouse gases with absorption of an equivalent of 9,704.31 tons of CO<sub>2</sub> per year (with the assumption that the CO<sub>2</sub> absorption factor is 15.43 kg kg/tree/year). The revegetation program contributes greatly to the environmental sustainability, especially in mitigating the impacts of GHG emission, landslides and floods.

Realization of Tree Planting in the Wayang Windu Geothermal Field Area in 2002-2018

Year	Location		Number and Type of Trees
2002	Soil Disposal Unit 1	13,000	Pine trees
2003	46 Ha of forest around Wellpad WW-A	45,980	Eucalyptus sp; 7,360 Persea Americana
		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
		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	300,000	Arabica coffee seedlings
2007	Power Plant Area	12,100	Suren, Silver Oak & Cyprus
		5,803	Altingia Excels
		4,096	Toona Sureni
		3,818	Eucalyptus Sp
		9,214	Eucalyptus Flatifolia
		4,800	Cyprus
		1,022	1,022 Accacia Decuren
		4,802	Persea Americana
2008	Critical Area around WWS, MB-D, MB-A, MB-D Wellpad ± 20 Ha	38,825	Eucalyptus Sp
		6,500	Suren
		4,400	4,400 Damar
		2,200	Silver Oak
2009	20 Ha of Critical Area around Lake Aul	8,800	8,800 Eucalyptus Sp
		4,894	Eucalyptus Sp
		4,894	Silver Oak
2011	MB-C Wellpad area	4,894	Silver Oak
		4,894	Cyprus
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	2,785	Trees
2013	Open Area along the pipelines of warehouse WW-A, WW-S dan MB-D	1,114	Suren
		4,26	Sengon
2014	Re-charge area near the production wells of MB-A, MB-B, WW-S and WW-A	2,39	Sobsi and other types such as Huru, Kihujan, Bungur, Eucalyptus
		7,900	Puspa, Rasamala, Manglid Baros, Eucalyptus, Sengon and Suren trees
2015	Re-charge area near WW-Q	5,000	Eucalyptus, suren, rasamala, avocado, baros, sengon, pine, puspa trees
2016	7 Ha of PTPN VIII Kertamanah Land Area(MBD Corridor & WWQ)	8,432	Coffee, Eucalyptus trees
	9.7 Ha of Perhutani Land (Cibitung and WWA)	16,267	Eucalyptus, Rasamala, Pine, Kibadak, Gemina, Avocado, Jackfruit, Kaliandra trees
	0,5 Ha of Perhutani Land (Earth Day - SCC)	350	Eucalyptus, Rasamala, Pine trees
2017	Bird Oase Location (SS1, MBD, WWQ) Land area: 0.5 Ha	321	Rasamala, Puspa, Manglid, Suren, Kibadak, Saninten trees as well as fruit trees such as avocado, guava and starfruit)

Year	Location		Number and Type of Trees
2018	Leuweung Citere Location. Land area: 1.3 ha	2,619	Sobsi, Jabon, Suren, Tahura (Nyatoh, Bayur Sulawesi, Salam, Huni, Binar, Ki Poho), Sawo, Guava trees
	WWA Location (Sector 71). Land area: 15 ha	1,870	Sobsi, Jabon, Tahura (Nyatoh, Bayur Sulawesi, Salam, Huni, Binar, Ki Poho), Kawung/Pinang, Coffee, Ki Amis, Akar Wangi, MPTS (Watery rose apple, Loquat, Guava, Orange)
<b>Total</b>		<b>628,925</b>	<b>Trees</b>

### Total Rehabilitated Land Area



### B. Flora Monitoring [GRI 304-4]

SEGWWL is aware of the importance of preserving the areas that have high conservation values. That is the reason why we take specific measures, i.e. biodiversity monitoring over plants that grow in land adjacent to our operational area, which we do it twice a year (per six months). In 2018, there were 9 flora monitoring locations, both internally and externally. Externally, there are WWS, WWA, MBE, MBA, MBB and MBC, while internally, there are SS1, MBD dan WWQ. In semester 1 of 2018, there were 37 types of plants and 38 types of plants in semester 2-2018 which dominated the area and grew well.

The tree diversity index produced is varied and each observation location has an environmental hue, including different vegetation conditions. The overall average diversity index (H') for monitoring in semester 1-2018 was 1.83 and 2.02 semester 2-2018. From this value, it can be interpreted that diversity for all internal and external areas is in the medium category. While the highest diversity index value with an environmental hue in the form of primary forest was obtained at the MBE

location, namely 2.63 in semester 1 of 1818 and 2.71 in semester 2-2018.

Some species of plants that can grow well are listed below: mentioned in the following list:

- *Acacia leucophloea* (Dekres)
- *Castanopsis argentea* (Saninten)
- *Cassuarina junghuhniana* (Cemara)
- *Castanopsis javanica* (Ki Hiur)
- *Engelhardia spicata* (Ki Hujan)
- *Eucalyptus deglupta* (Kalites/Kayu Putih)
- *Ficus fistulosa* (Beunying)
- *Grevillea robusta* (Salamander)
- *Lavanga sarmentosa* (Ki Jeruk)
- *Lithocarpus korthalsii* (Pasang Taritih)
- *Litsea sp* (Huru)
- *Macropanax dispermus* (Cerem)
- *Magnolia macklottii* (Baros)
- *Melaleuca leucadendra* (Kayu Putih)
- *Pinus merkusii* (Pinus)
- *Schima wallichii* (Puspa)
- *Syzygium lineatum* (Ki Salam)
- *Toona sureni* (Suren)

Among the plants listed above, only one is listed in IUCN Red List under the “vulnerable” category, i.e. *Pinus merkusii*; this is situated in Location SS-1. Surrounding the observed site are tea plantations and vegetation areas of SEGWWL, where we planted *Pinus merkusii*. The Location SS-1 is dominated by local plants; this indicates that SEGWWL’s activities do not result in negative impacts on the local vegetation.

**C. Fauna Monitoring and Protection [GRI 304-4]**

We conducted fauna monitoring in nine locations, i.e. WWS, WWA, MBA, MBB, MBE, MBC, SS-1, MBD, and WWQ which are situated around Mount Bedil, Mount Wayang, Mount Malabar, Situ Aul and other developed areas.

**Bird Monitoring**

Based on the results of monitoring carried out in 2018, 30-33 bird species from 30 families have been recorded, among others:

- *Colocallia linchi* (*Walet linci*),
- *Streptopelia chinensis* (*Tekukur biasa*),
- *Pycnonotusaurigaster* (*Cucak kutilang*)

- *Cacomantismeruleus* (*Wiwik kelabu*).
- *Rhipidura phoenicura* (*kipasan ekor-merah*)
- *Dicaeum sanguinolentum* (*cabe gunung*)
- *Cinnyris jugularis* (*burung-madu sriganti*)
- *Zosterops montanus* (*kacamata gunung*)
- *Lonchura leucogastroides* (*bondol jawa*)
- *Passer montanus* (*burung gereja erasia*)

All birds found were recorded to be under the LC (Least Concern) category according to IUCN, except Jerdon’s babbler with a VU (Vulnerable) label. Referring to Government Regulation No. 7 of 1999, there are three protected species found, namely *takur tohtor* (*Megalaima armilaris*), *elang ular bido* (*Spilornis cheela*), and *alap-alap sapi* (*Falco moluccensis*).

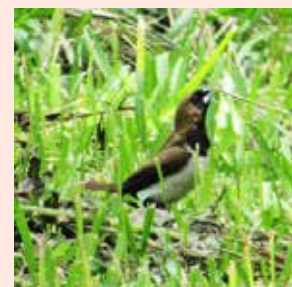
Bird species that are often found are *walet linci* (*Collocalia linchi*) and *wiwik kelabu* (*Cacomantis merulinus*). *Walet linci* is a species living in a various types of habitat, from lowland forests, highland forests, caves, to artificial habitats such as buildings.



*Lanius schach* (*Bentet kelabu*)



*Lonchura punctulata* (*Bondol peking*)



*Lonchura striata* (*Bondol tunggir putih*)



*Dendrocopos masei* (*Caladi ulam*)



*Ictinaetus malayensis* (*Elang hitam*)



*Tordirhamphus cloris* (*cekakak sungai*)

### Herpetofauna Monitoring

In addition to birds, the Company also conducted monitoring on the presence of amphibians or herpetofauna in 2018. This is because herpetofauna plays an important role in the food chain to maintain the ecosystem balance.

Based on observations made in semester 1-2018 and monitoring of herpetofauna, we found 5 species of amphibians from 4 families (Bufonidae, Megophryidae, Microhylidae, and Ranidae). Of the 5 species, the most commonly found ones are *Duttaphrynus melanostictus* (kodok buduk) and *Chalcorana chalconota* (kongkang kolam).

Herpetofauna found in semester 1 of 2018 is listed in the following table.

Family	Location				Protection Status	
	A	B	C	D	IUCN	PP No. 7 Th 99
<b>Bufonidae</b>						
<i>Duttaphrynus melanostictus</i>	✓			✓	LC	No
<b>Megophryidae</b>						
<i>Leptobranchium hasseltii</i>			✓		LC	No
<i>Megophrys montana</i>	✓				LC	No
<b>Microhylidae</b>						
<i>Microhyla achatina</i>				✓	LC	No
<b>Ranidae</b>						
<i>Chalcorana chalconota</i>	✓	✓	✓	✓	LC	No

Note: A = River Cisangkuy, B = Situ Aul, C = Sukaratu, D = River Cibitung

Based on herpetofauna monitoring conducted in semester 2 of 2018 at the beginning of the rainy season, amphibian classes consisting of 3 families (Bufonidae, Microhylidae, and Ranidae, table 2) and 3 species were found. Of the 3 species, the most commonly found are *Duttaphrynus melanostictus* (kodok buduk) and *Chalcorana chalconota* (kongkang kolam). Situ Aul could not be observed because the condition was still dry. The recapitulation of amphibian found is as follows.

### Herpetofauna species found in semester 2 of 2018 observation

Family	Location				Protection Status	
	A	B	C	D	IUCN	Permen LHK
<b>Bufonidae</b>						
<i>Duttaphrynus melanostictus</i>			✓	✓	LC	No
<b>Microhylidae</b>						
<i>Microhyla palmipes</i>	✓				LC	No
<b>Ranidae</b>						
<i>Chalcorana chalconota</i>	✓		✓	✓	LC	No

Based on IUCN conservation status, all amphibian species found are classified under the least concern (LC) status and not listed as a protected animal based on PP No. 7 of 1999.

### Mammal Monitoring

In addition to the monitoring of birds and amphibians, SEGWWL also observed and recorded findings of various types of mammals as illustrated in the following table:

### Types of Mammals Found at Monitoring Locations

No.	Location	Local Name	Scientific Name	Notes	IUCN Status - Sem1	IUCN Status - Sem2	PP No. 7 of 1999-Sem 1	PP No. 7 of 1999-Sem 2
1	WWQ	-	-	-	-	-	-	-
2	MBD	-	-	-	-	-	-	-
3	SS1	<i>Tupaia kekes</i>	<i>Tupaia javanica</i>	Direct encounter (1 animal)	LC	LC	No	-
		<i>Macan tutul jawa</i>	<i>Panthera pardus melas</i>	Scratches on barks	VU	CR	Yes	Yes
4	MBA	<i>Babi hutan</i>	<i>Sus scrofa</i>	Traces and nest encounter	LC	-	No	-
		<i>Tupaia kekes</i>	<i>Tupaia javanica</i>	Noise and direct encounter	LC	LC	No	No
5	MBB	<i>Babi hutan</i>	<i>Sus scrofa</i>	Nest encounter	LC	-	No	-
6	MBC	-	-	-	-	-	-	-
7	WWS	<i>Luwak</i>	<i>Paradoxurus</i>	Observed to locate up high in the trees	-	LC	-	No
8	WWA	<i>Monyet ekor panjang</i>	<i>Macaca fascicularis</i>	Direct encounter (4 animals)	LC	-	No	-
		<i>Babi hutan</i>	<i>Sus scrofa</i>	Nest encounter	LC	-	No	-
		<i>Babi hutan</i>	<i>Sus scrofa</i>	Traces encounter	LC	-	No	-
9	MBE	<i>Tupaia kekes</i>	<i>Tupaia javanica</i>	Direct encounter (1 animal)	LC	LC	No	No
		<i>Tikus tanah</i>	<i>Rattus sp.</i>	Direct encounter (1 animal)	LC	-	No	-

Mammals were found in five locations out of a total of nine observation sites in the SEGWWL area. Some species found through direct encounter are Tikus tanah (*Rattus sp.*), found at the MBE location, Luwak at WW-S, Tupai kekes (*Tupaia javanica*) found at the MBE, SS1, and MBA locations, and Long-tailed monkey (*Macaca fascicularis*) found at the MBE location. Tupai kekes themselves can be found in primary or secondary forest vegetation, but are more commonly found in primary forests, i.e. forests that have not or are not disturbed.

The Observers succeeded in finding 3 types of large mammals in the Aul block forest area, namely the Javan Leopard (*Panthera pardus melas*), Babi hutan/ Wild boar (*Sus scrofa*), and long-tailed monkey (*Macaca fascicularis*). Javan leopards and wild boar are identified from their traces and nests, while long-tailed monkeys are observed through direct encounter in the WWA area.

Long-tailed Monkey (*Macaca fascicularis*)

Leopard Scratches

The type of mammal that is of high concern in the monitoring location is Javan Leopard (*Panthera pardus javanica*). This species belongs to the Javanese endemic species because it can only be found on the Java island. Javan leopards play an important role in maintaining the food chain cycle in the wild as a top predator (CWMB-ICWRMIP 2013). This species is protected under the Government Regulation of the Republic of Indonesia No. 7 of 1999 concerning Preservation of Wild Plants and Animals. It is also listed on the IUCN Red List, with a Critically Endangered status or highly endangered and

is also included in the CITES under Appendix I category where trade of specimens is restricted.

From the existing data, the Javan leopard (*Panthera pardus melas*) is the largest predator in the area compared to other mammal species found. According to the testimony of local residents, they sometimes also see the Javanese leopard (*Panthera pardus melas*) coming down from the mountain, out of the forest, and occasionally entering the border between the forest and the plantation.

#### Conservation status of mammals found at the monitoring site

No.	Name of Species				Endemic
		PP 7/1999	IUCN	CITES	
1	<i>Tupaia javanica</i>	-	LC	II	-
2	<i>Sys scroia</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 comota</i>	D	EN	-	E

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

#### Butterfly Monitoring

From the results of butterfly monitoring at each SEGWWL observation site, 9 species of butterflies were found, which consist of 5 families, namely Nymphalidae (3), Papilionidae (2), Lycaenidae (2), Hesperidae (1) and Pieridae (1). The most common types of butterflies found in this period are *Ypthima pandocus* from the Nymphalidae family and *Eurema hecabe* from the Pieridae family.



*Ypthima pandocus butterfly*



*Eurema hecabe butterfly*

Out of the 9 species of butterflies found, there is one species that is endemic to the island of Java, namely *Mycalesis sudra*, and one species included in protected animals based on PP No. 7 of 1999, namely *Troides helena*. This shows that the location of SEGWWL provides an opportunity for these endemic species to survive.

#### D. Aquatic Biota (Plankton and Benthos) Monitoring

SEGWWL also conducts monitoring on aquatic biota, namely plankton and benthos, in the water or river ecosystem adjacent to its operational area. Plankton and benthos are important water organisms in aquatic life. While plankton float in accordance with a water stream, benthos crawl on the sediment under water bodies. Plankton is a source of food for most of aquatic organisms; while benthos consume the corpses of animals on the sea/river beds. The excrement would dissolve and turn into nutrition that goes back to the surface and be consumed by other organisms.

During the monitoring from the three monitoring locations, 8-16 genera and 3-7 classes of phytoplankton were identified. From the general monitoring result, the genera are found in freshwater and commonly came from the Bacillariophyceae class or often known as diatoms.

In general, benthos density at all stations is relatively low. Almost all observation points are in the category of moderate diversity. Based on the result of diversity indices in marine phytoplankton analysis from three monitoring locations, the water or river ecosystem quality around SEGWWL area was not contaminated, with a value of  $H' \geq 2$  in each sample.

There were no specific types of phytoplankton which dominated the ecosystem, indicating that the ecosystem quality is in a balanced condition. Hence, it demonstrates that SEGWWL activities did not adversely affect or interfere the proportion of phytoplankton population in its surrounding waters.

## PLANT NURSERY

SEGWWL believes that the establishment of nurseries and revegetation efforts are a strategic matter for environmental improvement, especially on critical lands that require an adequate supply of the best plant seedlings. Therefore, the Company manages the nursery independently to meet the needs of revegetation plant seeds as mentioned above, especially native plants which are suitable for the local ecosystem. Plant nursery takes place in WWS, or the inactive well area.

As of December 2018, a number of 35 species of 1,029 trees had been cultivated through plant nursery. The seeds produced by the nursery were then used for revegetation around the Company's operational area and for the purpose of cooperation with Perum Perhutani.



**List of Plants in Nursery (2018)**

No	Plant Name	Latin Name	Total
1	Saninten	<i>Castanopsis argentea</i>	32
2	Puspa	<i>Schima wallichii</i>	316
3	Rasamala	<i>Altingia excelsa</i>	65
4	Suren	<i>Toona sureni</i>	35
5	Manglid Baros	<i>Manglietia glauca</i>	170
6	Sengon	<i>Albizia falcataria</i>	8
7	Lengkeng	<i>Nephelium longana</i>	4
8	Bungur	<i>Lagerstroemia speciosa</i>	8
9	Asem Thailand	<i>Tamarindus sp.</i>	2
10	Kaliki (Jarak)	<i>Ricinus communis</i>	3
11	Ki Sireum	<i>Syzygium rostratum</i>	6
12	Huru	<i>Macaranga rhizinoides</i>	37
13	Alpukat	<i>Persea americana mill</i>	19
14	Kayu Putih	<i>Eucalyptus urophylla</i>	20
15	Manglid (biasa)	<i>Magnolia acuminata L</i>	32
16	Loquat	<i>Eriobotrya japonica</i>	35
17	Serai	<i>Cymbopogon citratus</i>	17
18	Kunyit Putih	<i>Kaempferia rotunda L</i>	3
19	Terung	<i>Solanum melongena L</i>	1
20	Lidah Buaya	<i>Aloe vera linn</i>	21
21	Bangle	<i>Zingiber montanum</i>	9
22	Pandan	<i>Pandanus amaryllifolius roxb</i>	4
23	Kencur	<i>Kaempferia galanga L</i>	3
24	Jahe	<i>Zingiber officinale roscoe</i>	5
25	Jeruk Purut	<i>Citrus hystrix DC</i>	1
26	Seledri	<i>Apium graveolens L</i>	39
27	Kunyit	<i>Curcuma longa Linn</i>	13
28	Cabai Rawit	<i>Capsicum frutescens L</i>	94
29	Kumis Kucing	<i>Orthosiphon aristatus</i>	4
30	Belimbing	<i>Averrhoa carambola L</i>	1
31	Mint	<i>Mentha piperita L</i>	2
32	Bawang Putih Tunggal	<i>Allium sativum L</i>	12
33	Sirih Merah	<i>Piper crocatum ruiz &amp; pav</i>	1
34	Kacang Koro	<i>Phaseolus sp</i>	4
35	Kuca	<i>Allium tuberosum rottler ex spreng</i>	3
<b>Total</b>			<b>1,029</b>

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

Star Energy Geothermal (Wayang Windu) Limited has consistently carried out environmental management and monitoring in accordance with laws and regulations in the environment from exploration stage (1997-1999) to exploitation stage (2000-present).

The environmental management covers environmental aspects that potentially have significant impacts on the environmental quality. This includes a pre-construction stage, a construction stage (also drilling activities) and operational activities of steam fields and power plants. From an environmental quality perspective, the environmental conditions representing the stages above have also been monitored, namely:

- Social, economic and cultural aspects of the local inhabitants
  - Quality of air emission, ambience, and noise
  - Physiography and geology conditions
  - Flora and fauna
  - Water and water organism quality
  - Traffic volume
  - Land utilization

Environmental monitoring is performed regularly referring to the environmental management matrix in the approved environmental documents. The reports are submitted periodically to the respective institutions.

In addition to management, the Company also executes programs categorized as 'beyond compliance', such as material use efficiency, energy efficiency, emission and waste reduction, water use efficiency, and biodiversity management.

## MATERIAL USE [GRI 301-1]

In geothermal power generation (PLTP) system, the amount of electricity produced depends on the production of steam as the main material that can flow inside the turbine system of power generation. To utilize steam originating from geothermal as energy to motor the generator turbines of power plants, locations that have geothermal potentials would need drilling. In addition to drilling of new hot steam production wells, it is also necessary to conduct maintenance drilling program for make up wells from production wells in existing locations.

Overall, besides hot steam, a variety of supporting materials, both renewable and non-renewable, are needed in geothermal power generating process. Therefore, in the use of this power

plant material, the Company targets to implement a strict efficiency policy to optimally generate electricity and minimize impact on the environment from the use of various supporting materials.

In addition to steam from production wells, one of the supporting materials used is caustic soda and biocide. Caustic soda is used to neutralize the pH or acidity level of cooling water, while biocide is used to control algae growth. Both are useful for removing gas (0.6-2.6%) especially CO<sub>2</sub> and H<sub>2</sub>S in uncondensed geothermal steam in the condenser so as not to damage the turbine generator.

The total requirement for caustic soda in 2018 was 300,000 kg (an increase of 20.0% compared to the previous year) while the biocide was 26,399 kg (increased 63.6% compared to the previous year). This increase was due to the operation of injection pumps as the injection strategy was altered. Both materials are consumable and non-renewable.

**Table of Materials Used in the Operations of Geothermal Power Generation**

Description	Unit	Note	Period				
			2015	2016	2017	2018	
Steam Generator Unit- 1	Tonne	Renewable Raw Material	6,464,802	4,035,364	6,823,827	6,800,755	6,682,810
Steam Generator Unit-2	Tonne	Renewable Raw Material	6,725,747	3,969,529	7,037,910	6,900,326	6,982,151
Caustic Soda	Kg	Used Auxiliary Materials	319,884	252,530	210,000	250,000	300,000
Biocide, Sulphur 3DT Trasar, and Dispersant	Liter	Used Auxiliary Materials	16,452	13,751	16,576	16,136	26,399

## ENERGY MANAGEMENT

### Energy Efficiency [GRI 302-4]

SEGWWL implements various programs to improve the optimum operations of the generation system while at the same time performing energy saving and efficiency programs as a form of participation in GHG emission mitigation efforts. Besides its result in saving financially, this program also reduces greenhouse gas (GHG) emissions.

To save energy, we optimize cooling tower by adding fan blades to Unit-1 cooling tower. When fan blades are added, the cooling tower will draw more air, and the temperature of the cooling water will decrease, thus increasingly reducing the pressure inside the condenser. To that end, the generation will increase even though the steam flow into the turbine remains stable. The energy efficiency resulted from this activity amounted to 5.17 GWh.

In addition, we also prepared energy saving initiatives in the supporting activities through a series of programs, namely:

- Replacing fluorescence lamp to energy-saving LED.
- Replacement of coolant in the refrigeration system, from Freon R22 to R417A to reduce Ozone Depleting Substances (ODS) emissions while reducing power consumption.
- Replacement of LPG use with electricity for laundry dryers and stoves.
- Optimization of operational vehicle fuels.

Generally, in 2018 we carried out a total of 25 operational optimization programs through the implementation of engineering and other savings activities that have an impact on the increase in total energy efficiency to an equivalent of 357.56 GWh as illustrated in the following table.

**Table of Energy Efficiency [GRI 302-4]**

Program	Unit	Period				
		2014	2015	2016	2017	2018
<b>Production Process</b>						
Optimum use of steam/steam rate without reducing generation	GWh	17.52	17.52	17.52	17.52	17.97
Reducing use of electricity by conducting gravity strategy on brine and condensate injection system	GWh	5.25	3.94	5.25	5.25	9.34
Modification of Condenser Nozzle Unit 1	GWh	13.14	9.96	13.14	13.14	13.14
Water Pipe Cleaning at Cooling Tower Unit-1	GWh	17.52	13.14	17.52	17.52	17.52
Change of Duration of Steam Free Test Unit-2	GWh	0.49	0.30	0.39	0.39	0.38
Redesigning funnel of cooling tower Unit to implement the design in cooling tower Unit 2	GWh	12.61	9.5	12.61	12.61	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	2.09
Implementing sulphur control in the cooling water system to maintain cooling system performance	GWh	3.94	2.96	3.94	3.94	3.62
Redesigning funnel of cooling tower Unit 1	GWh	12.61	9.46	12.61	12.61	12.70
SIMOP (Simultaneous Operation)	GWh	26.76	10.08	17.22	23.16	125.18
The replacement program of several diesel-fueled gensets or pumps to environmentally-friendly power	GWh	0.43	0.43	0.43	0.43	0.45
Blade Cooling Tower Inspection	GWh	8.76	6.57	17.52	17.52	17.52
Well Washing (Well Intervention)	GWh	127.44	28.80	40.42	9.72	111.74
Monitoring of steam trap condition	GWh	-	-	0.11	0.11	0.11
Use of FRP for pipe heat protector	GWh	-	-	0.005	0.009	0.009
Addition of fan blade angle of cooling tower Unit 1	GWh	-	-	-	-	5,170
Optimization of condenser performance by decreasing the set point level of water in the condenser	GWh	-	-	-	-	1,730

Program	Unit	Period				
		2014	2015	2016	2017	2018
<b>Supporting Processes</b>						
Replacement of Freon R22 to R417A	GWh	0.12	0.09	0.12	0.12	0.12
Electricity savings by changing Fluorescence lamps to LED lights	GWh	0.02	0.02	0.020	0.020	0.02
Optimization of operational vehicle fuel	GWh	0.29	0.29	0.29	0.29	0.29
Replacement of the use of LPG fuel with environmentally friendly electricity in the operation of the Dryer and stove	GWh	0.83	0.83	0.83	0.83	0.83
Electricity energy savings by installing solar energy panels	GWh	0.0009	0.0007	0.0009	0.0009	0.0009
Use of an electric stove to bake bread	GWh	-	-	-	-	0.012
Use of the Motion Sensor as a light switch in the Administration Building Toilet	GWh	-	-	-	-	0.002
Scheduling the use of lights in the workshop	GWh	-	-	-	-	0.015
Activities related to Community Development	GWh	-	-	-	-	-
Street lighting for community access	GWh	3.30	3.30	3.30	3.30	3.30
Utilization of used cooking oil for autoclave in the cultivation of oyster mushroom done by fostered communities	GWh	-	-	-	-	1.70
<b>Total</b>	<b>GWh</b>	<b>252.24</b>	<b>118.31</b>	<b>164.47</b>	<b>139.71</b>	<b>357.57</b>

### Energy intensity [GRI 302-3]

The total gross electricity production in 2018 amounted to 1,957,921 MWh (7,048,517 GJ) as a result of various energy efficiency programs and the improvement of power plant equipment performance carried out by the Company. Meanwhile, total electricity usage (house load) for all activities was only around 62,664 MWh (225,592 GJ) as we were able to well manage our operational activities through various efficiency programs. Electricity needs for operational activities include: electricity supply for power generation equipment, along with the auxiliary and ancillary equipment which is used for lighting in the administration building, employees' residence in the field, and utilities.

Therefore, the total net electrical energy that can be channeled into the PLN network as a buyer was 1,895,257 MWh (6,822,924 GJ). While the intensity of energy use compared to the amount of electricity generated was 3.20%, increased from 3.30% in the previous year.

### Electricity Production and Electricity Consumption

Description	Unit	Year				
		2014	2015	2016	2017	2018
Gross Production	MWh	1,913,208	1,153,373	1,991,016	1,969,070	<b>1,957,921</b>
	GJ	6,887,549	4,152,143	7,167,658	7,088,652	<b>7,048,517</b>
Internal Use	MWh	67,660	42,072	66,570	64,896	<b>62,664</b>
	GJ	245,374	151,459	239,651	233,626	<b>225,592</b>
Net Production	MWh	1,846,925	1,111,244	1,923,953	1,907,401	<b>1,895,257</b>
	GJ	6,458,109	4,000,478	6,926,230	6,866,643	<b>6,822,924</b>
<b>Energy Consumption Intensity</b>	<b>%</b>	<b>3.56%</b>	<b>3.65%</b>	<b>3.34%</b>	<b>3.30%</b>	<b>3.20%</b>

It is safe to say that the level of electricity use in all supporting buildings is fairly efficient due to energy use efficiency and savings policy program. This result is based on the calculation of the Energy Consumption Intensity (ECI) standard for air-conditioned rooms. The ECI standard for air-conditioned rooms is between 4.17 - 7.92 kWh/m<sup>2</sup>/month, SEGWWL's rate is 3.91 kWh/m<sup>2</sup>/month for offices and 1.12 kWh/m<sup>2</sup>/month for housing. Referring to the following table, the use of power energy in offices and housing areas were categorized as very efficient.

Criteria	AC room	Non AC Room (kWh/m <sup>2</sup> /month)
(kWh/m <sup>2</sup> /month)	Non AC Room	0.84-1.67
(kWh/m <sup>2</sup> /month)	7.92-12.08	1.67-2.5
Fairly Efficient	12.08-14.58	-
Slightly Wasteful	14.58-19.17	-
Wasteful	19.17-23.17	2.5-3.34
Extremely Wasteful	23.75-35.75	3.34-4.17

Source: National Education Department of the Republic of Indonesia 2004

## Fuel Consumption and CO<sub>2</sub> Emission

[GRI 302-4, GRI 305-2]

In running supporting activities in SEGWWL's operations, the Company uses diesel fuel for its operational vehicles. To implement energy efficiency programs, we regulate the route and mileage of all vehicles. In addition, we apply an operational vehicle age restriction policy and the periodic emission testing of vehicles that we use.

Thanks to the implementation of various efficiency initiatives, the company's use of diesel is relatively controlled. Likewise, CO<sub>2</sub> emissions from these supporting activities are also relatively controlled.

The following table describes fuel consumption of operational vehicles. In 2018, there was an increase in diesel consumption of 5,900 L or equivalent to 22,077 joules of additional energy consumption, or equivalent to CO<sub>2</sub> emissions amounting to 349.11 tons of CO<sub>2</sub> equivalent. The calculation of CO<sub>2</sub> equivalent uses emission conversion standards by using 2016 as a base year.

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

Description	Unit	Year				
		2014	2015	2016	2017	2018
Used Diesel	000 Liters	120.53	133.32	126.99	120.41	126.31
Austerity	000 Liters	0.70	12.79	-63.30	-65.80	5.90
Mileage	000 Km	1,007.8	1,090.40	1,046.60	949.40	1,000.20
CO <sub>2</sub> Emissions	Equivalent Ton	322.47	356.69	339.67	322.15	349.11

## EMISSION MANAGEMENT

As a form of Wayang Windu's participation in GHG emission mitigation (especially CO<sub>2</sub> gas), the Company seeks to reduce the amount of emissions from each emission source to comply with regulatory requirements and standards relating to emissions. The main emission source comes from the power generation system where the total emissions from each cooling tower cell are low, while the other emission sources come from activities related to transportation, cooling facilities, office activities and employee housing facilities.

We have implemented various programs and policies to reduce emissions, including intensifying CDM programs that contributes to substantial emission reduction as part of the optimization of CO<sub>2</sub> emissions reduction from geothermal power plants. Basically, the emission management programs implemented are closely related to the programs run to improve the efficiency of the company's energy consumption.

### Plant Emission [GRI 305-1]

PLTP is an eco-friendly power plant as it only emits greenhouse gases (CO<sub>2</sub>) from NCG (Non-Condensable Gas) contained in steam from the generation process. This is the lowest (CO<sub>2</sub>e emission of 250 lbs/MW/day) as compared to other fossil fuel power generations, namely PLTU (coal), PLTD (diesel), and PLTG (gas).

To reduce emission from PLTP, we need to minimize the formation of NCGs in the steam of power generation. We shall correctly measure steam supply that enters the power plant system to ensure there is no excess in the steam distribution pipeline system from production wells. The method is to apply the "Integrated Control" with a zero venting concept during normal operation. In essence, excess steam resulting from fluctuations at the steam source (from the well or plant out put), is regulated through the autotrimming valve system, so that there is no excess supply of steam resulting in steam venting.

SEGWLL is the first geothermal operator in the world that applies this system. As a result, the total emission from power plants in 2018 was 110,486.00 TCO<sub>2</sub>e, a decrease of 9.5% from previous year's 122,037 TCO<sub>2</sub>e.

### Emissions Management of Transportation Activities [GRI 305-2]

We run this program to mitigate CO<sub>2</sub> gas emissions from transportation activities. The approach that we apply is to measure the efficiency of fuel use from transportation activities and calculate the equivalent CO<sub>2</sub> emissions generated based on commonly used standard formulas, which is based on chemical reactions occurring in the combustion process. There are two types of transportation activities that we manage, namely: first, direct transportation related to operational activities in the field or general activities; and second, indirect transportation activities related to operational support activities. The following are efficiency programs that we apply.

- Setting the age of vehicles used in the field.
- GPS installation in every operational vehicle and implementation of the travel route setting procedures.
- Intensification of the use of information technology-based support infrastructure, namely video conference to reduce unnecessary transportation activities.

Referring to the Regulation of the Minister of Environment No. 5/2006, on the Limit of Old Motor Vehicle Exhaust Emissions and EURO-2 standards, we performed emission and feasibility tests on all operational vehicles. The emission and feasibility tests involved the local Transportation Department.

As a result of the implementation of these energy efficiency policies and programs, the GHG emissions generated from transportation activities in 2018 changed as follows.

- Direct transportation amounting to equivalent 349.11 tons of CO<sub>2</sub>, an increase of 8.4% from the previous year's 322.15 TCO<sub>2</sub>e.
- Indirect transportation amounting to equivalent 18.74 tons of CO<sub>2</sub>, an increase of 67.6% from the previous year's 11.18 TCO<sub>2</sub>e.
- The increase in transportation emissions was mainly due to an increase in physical movement activity around the steam fields and power plants as a result of the ongoing make up well activities.

### Total Emissions and GHG Reduction from Wayang Windu Operations [GRI 305-1, GRI 305-2, GRI 305-4, GRI 305-5]

Through the implementation of various emission control programs implemented in an integrated manner with the energy efficiency program, the total emissions from the Company's electricity generation and geothermal support activities in 2018 amounted to 110,855.85 tons of CO<sub>2</sub> equivalents, a decrease of 9.4% from 122,351.14 tons of CO<sub>2</sub> equivalents in the previous year, as shown in the following table.

**Total CO2 Emissions of Wayang Windu [GRI 305-1, GRI 305-2]**

Description	Unit	Year				
		2014	2015	2016	2017	2018
<b>A. Emissions from Production Processes</b>						
Generator Emissions	MTCO2	159,934.00	93,947.00	137,466.00	122,037.00	<b>110,486.00</b>
<b>B. Emissions from Supporting Facilities</b>						
- Transportation	MTCO2e	322.47	356.69	339.67	322.15	<b>349.11</b>
- Waste Processors	MTCO2e	6.94	0.997	-47	-19	<b>0.997</b>
- Public Transportation	MTCO2e	52.36	25.17	19.88	11.18	<b>18.74</b>
<b>Sub-Total Emissions from Supporting Facilities</b>	MTCO2e	381.77	382.00	312.00	314.14	<b>368.85</b>
<b>Total Emission from Business Unit</b>	<b>MTCO2e</b>	<b>160,315.77</b>	<b>94,329.86</b>	<b>137,778.27</b>	<b>122,351.14</b>	<b>110,854.85</b>

**Table of CO2 Emission Reduction of Wayang Windu [GRI 305-4, GRI 305-5]**

Description	Unit	Year				
		2014	2015	2016	2017	2018
Wayang Windu CDM Program	TCO2e	764,667.00	435,689.00	781,487.00	765,390.00	759,778.00
Replacement of LPG with electricity in the Dryer and STOVE	TCO2e	22.38	25.37	23.88	23.88	23.58
Replacement of Freon R22 with R417A	TCO2e	32.92	32.92	32.92	32.92	21.93
Application of Eco-friendly Pump & Genset	TCO2e	2.54	2.54	1.57	925.00	519.80
Optimization of Operational Vehicle Fuel	TCO2e	322.00	357.00	340.00	322.00	349.11
Minimization of the use of fuel with video conference	TCO2e	15.11	15.11	14.07	18.82	27.14
Shuttle use optimization		799.13	799.13	799.13	799.13	189.79
Optimization of geothermal energy as renewable power with the use of FRP in pipes		-	-	0.13	-	7.52
<b>Absolute Total of Emission Reduction</b>	TCO2e	765,861.08	436,921.07	782,698.70	767,511.75	760,916.87
<b>Total Generation Production</b>	MWh	1,848,434.00	1,113,597.00	1,922,142.00	1,912,594.00	1,912,594.00
Emission Intensity to Generation	TCO2e/MWh	0.41	0.392	0.407	0.401	0.398
Ratio of Emission Reduction to Total Emission	kali	5	5	6	6	7

### Other GHG Emission Sources

Another source of emissions is operational supporting activities. In order to reduce GHG emission from the activities, the Company has replaced the usage of LPG with a more environmentally friendly electricity in the operation of dryers and stoves. In 2018, the emission from this process reached an equivalent of 23.58 TCO<sub>2</sub>e, which was relatively the same with the previous year.

### Non-Condensable Gas (NGC) EMISSION Monitoring

SEGWWL regularly monitors the emissions of cooling towers at Units 1 and 2 power plants to make sure that the levels are below the provisions of the quality standards established by the Government. Twice a year, we partner with independent and accredited third parties to monitor and measure non-condensed gas emission levels such as CO<sub>2</sub>, H<sub>2</sub>S, and NH<sub>3</sub>. The monitoring results show that the levels of the NGCs were below the quality standard in 2018.

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

SEGWWL strives to reduce ozone depleting substances – ODS gas emissions by, among others, replacing the use of Freon to a more environmentally friendly R417A (HFC) in cooling facilities. This is in accordance with the President Regulation No. 23 of 1992 concerning the Ratification of Vienna Convention for the Ozone Layer Protection and the Montreal Protocol on substance reduction that potentially diminishes the ozone layer. This program improved energy efficiency, with savings up to 20% or equivalent with electricity savings of 120 MWh per year, in addition to a CO<sub>2</sub> emissions reduction of 32.92 MT CO<sub>2</sub> per year.

We also monitor the emissions of gases such as H<sub>2</sub>S and NH<sub>3</sub> coming out of the main equipment in the PLTP power generation system. Based on the results of periodic emission test monitoring conducted by an independent party, during the reporting period, the amount of H<sub>2</sub>S and NH<sub>3</sub> gas emissions was always below the Environmental Quality Standards set by the Government regulations.

Parameter	Quality Standard	Unit	Test Results
CO <sub>2</sub>	na	%	<1
H <sub>2</sub> S	35	mg/Nm <sup>3</sup>	<5 s/d 0.43
NH <sub>3</sub>	0.5	mg/Nm <sup>3</sup>	<0.1 s/d 0.3

## WATER MANAGEMENT [GRI 303-1, GRI 303-3]

SEGWWL manages water use by prioritizing the use of produced water as much as possible and utilizing fresh water as minimally as possible. In our operations, fresh water is only used for domestic purposes (bathing, washing and toilet/MCK). We measure water usage by calculating the intensity of water use divided by total power generated as one of the parameters of water management performance. While water consumption is calculated using a standard/methodology of meter reading.

In order to maximize the performance of water management, produced water (brine) and condensate from the electricity generation process are used for the following process:

- Injection of water into the earth using brine water and condensate water, which is water produced from the operation of the steam field and PLTP.
- Use of condensate or brine water for make up well-drilling and well washing activities.

Thus, SEGWWL reuses all the produced condensate water or brine water and, consequently, ground water is not needed in the make up well-drilling and well washing activities. The total volume of reused condensate water in 2018 was 311,479.16 tons, a decrease of 77.02% from the previous year which amounted to 1,355,326.92 tons. The amount of reused produced water accounted for 14.33% of the total produced water generated. [GRI 303-1]

Domestic water use is supplied from shallow groundwater and surface water. In 2018 the Company consumed 12,771 m<sup>3</sup> of shallow groundwater, an increase of 12.98% from previous year's 11,303 m<sup>3</sup>. Thus, the intensity of water usage divided by total generated electricity was 0.0066 m<sup>3</sup>/MWh or equal to 6.6 liters/MWh. The increase in water volume for domestic purposes was mainly due to the increase in make up well activity in 2018.



The Company continues to minimize use for the Company's operations and domestic needs. 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. We monitor surface water collection and utilization to meet domestic needs as well as to ensure a well-balanced usage of shallow groundwater around the operational area.

SEGWWL also processes a large part of water volume to reuse it. Some of the remainder, after being ensured to fulfill the quality standards set by the government, is sent back to the waterbody, Cisangkuy River. Total water volume sent back to the river was 7,449 m<sup>3</sup> (2017: 15,491 m<sup>3</sup>). Before sending the treated waste water back to the waterbody, which is Cisangkuy River, we perform a 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.

In water monitoring and processing, we cooperate with experienced independent parties to meet the approved quality standards. **[GRI 306-1]**

Other measures of water conservation are building water absorption facilities to absorb rainwater, in the form of water absorption wells and biopores. This program is in accordance with the Regulation of the Minister of Environment No. 12/2009 on Rainwater Utilization. As of 2017, the total absorption wells for rainwater absorption is currently 5 units and 100 biopores. The absorption rate depends more or less on the local rainfall.

In addition, we build rainwater reservoir ponds of which the water is used for washing vehicles. After the water is used for washing vehicles, we use the water again as recycled water. Water utilization from this pond is predicted to be around 777 from 1,161 m<sup>3</sup>/month in 2017. The program is implemented to reduce the usage of surface water for domestic use.

## WASTE MANAGEMENT AND TREATMENT **[GRI 306-2]**

SEGWWL reinforces its waste management policy as stated in a special procedure called Waste Management (EPE.WM), which is performed in the following approaches:

- The principle of 3R (Reduce waste, Re-use and Recycle) and safe disposals.
- Separation of the type of waste into two major groups, namely hazardous and toxic waste (B3) and Non-B3 waste (consisting of organic, non-organic, and metal waste).

Based on its physical state, the Company processes 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. The waste management, especially for garbage, comprises waste monitoring, waste sorting, transport to temporary storage area (TPS) and transport to final storage area (TPA)).

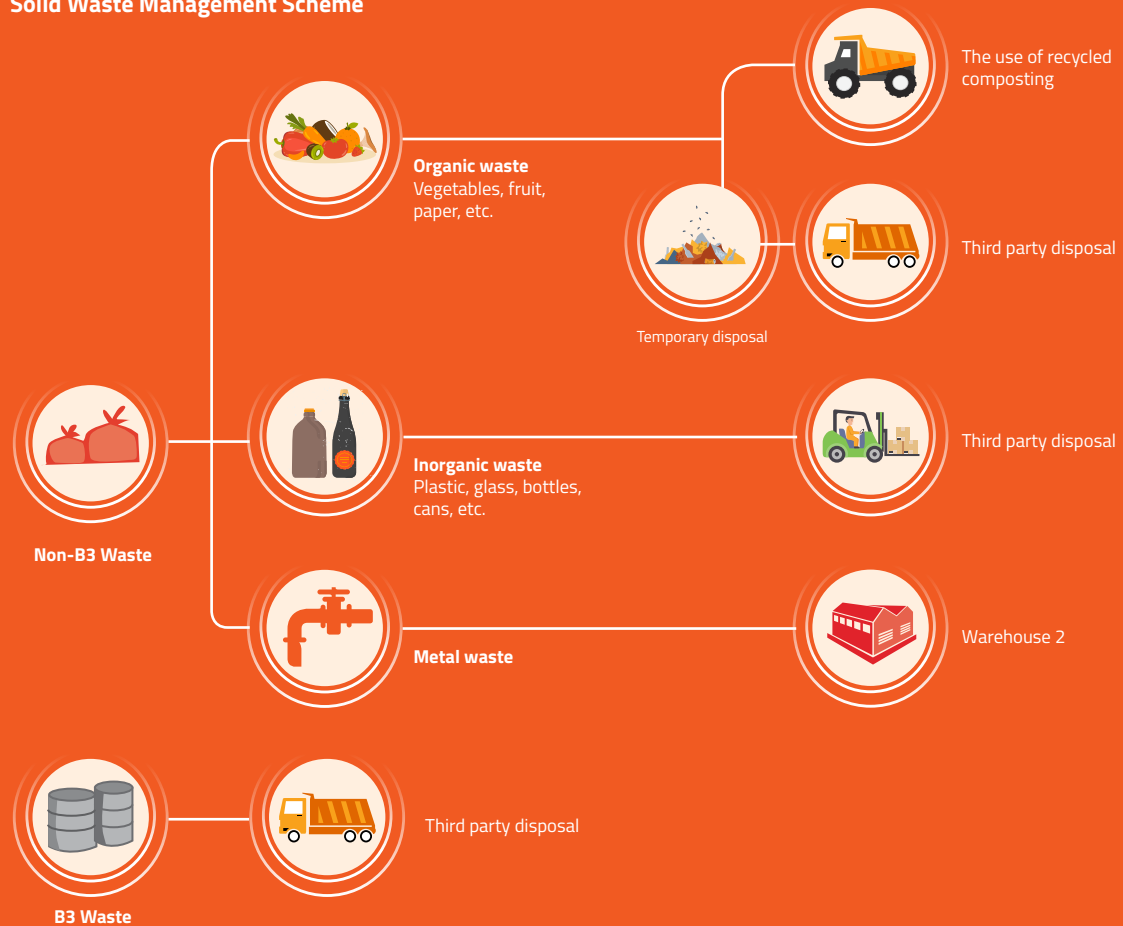
In managing waste, the Company always prioritizes the Reduce principle through improved operational efficiency. The example of such implementation is ordering caustic soda using a bulk system; which results in the decrease of B3 waste from this material at the amount of 9 tons. In addition, we also reduce battery waste by replacing analog phones with digital phones (IP Phones) with POE (Power over ethernet) system.

### E-Document Application to Reduce Paper Waste

One of the benefits of ever-advancing technology is waste reduction. We apply this by drastically reducing use of paper and replacing with E-Doc application for various purposes, such as filling-in form, report, etc. Some of waste reduction efforts are as follows:

- 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.
  - Protap Online Application for online power transaction processing.
  - Data logger for the operator reporting program. Total paper savings from the use of the application in 2018 was 99.43 kg (2017: 8.40 kg).

### Solid Waste Management Scheme



### 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 facilities to handle hazardous waste, which is 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.
- Submitting report of B3 waste management once every three months to the Ministry of Environment and submitting the copy to the Regional Environmental Management Agency (BPLHD) of West Java Province, BPLHD Bandung Regency and PPLH Java.

The Company also reduces B3 waste, especially large quantities of B3 waste in the form of used oil from the turbine gearbox. Through analysis program, we change lubricant oil under operational conditions, not based on the recommended changing schedule according to the equipment's specifications.

For final disposal of B3 waste, we appoint an environmentally aware, government-certified third party which complies with the applicable rules and regulations.

**Table of Waste Based on Type and Disposal Method [GRI 306-2]**

Hazardous & Toxic Waste (B3)	Weight (Ton)			Disposal Method
	2016	2017	2018	
Contaminated waste	4,358	1,142	0.039	Packed and sent to licensed third party
Laboratory waste	0.006	0	0.084	Packed and sent to licensed third party
Medical waste	0.03	0.018	0.086	Packed and sent to licensed third party
Dry battery	0.01	5,726	5,672	Packed and sent to licensed third party
Expired chemical substance	0	0,03	0	Packed and sent to licensed third party
Used lubricant oil	6,266	2,971	3,832	Packed and sent to licensed third party
Used toner	0.001	0.05	0.020	Packed and sent to licensed third party
TL lamp waste	0	0.228	0.176	Packed and sent to licensed third party
Electronic waste	0	0	0	Packed and sent to licensed third party
Used B3 packaging	0	0	0.085	Packed and sent to licensed third party

### Non-Hazardous (Non B3) Waste Management

SEGWL 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. To reduce waste volume, the Company equally applies Reduce and Recycle principles for non-B3 waste, and as a result, the amount of non-B3 waste decreases every year. Specifically, for organic waste resulting from the majority non-B3 waste, we applied 78% of recycle into compost fertilizer. The amount of organic waste per year is approximately 12,277 kg or 1,023 kg per month, which decreased from 12,708 kg in 2017.

Outside organic waste, total weight of non-B3 waste produced in 2018 was 573 kg or 47.74 kg/month, a decrease of 60.40% from 1.45 ton in the previous year. Total recycled non-B3 waste in 2018 was around 12.22% on average.

Out of non-routine activities and projects, the Company produced reusable waste in the form of fan blade in 2018 and used fan stack and cooling tower fill in 2017. A total of 800 kg of waste in 2018 as compared to 14.56 tons in 2017 has been entirely used by the local community around the Company's area.

An example of a non-B3 waste reutilization is the use of fan blades (NCG air booster fans from the cooling tower chimney) which is used as a gate at the village or alley. A used fan stack is reused by Pecinta Alam Tapak Tiara as an outdoor adventure arena in Rahong Forest area. 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.

### Volume and Type of Non-B3 Waste of the Company

Description	Weight (Kg)			Disposal Method
	2016	2017	2018	
Organic Waste	12,696	12,708	12,277	Processed to be compost and disposed of to TPA
Paper	421	768	267	Disposed of to TPA (Non-Recycleable)
Plastic	206	238	237	Disposed of to TPA (Non-Recycleable)
Shredded Paper	131	440	70	Packed and sent to waste bank
Bantex	70	0	0	Packed and sent to waste bank
Carton Box	82	40	0	Packed and sent to waste bank
Fan Blade	1,250	640	800	Packed and sent to be used by the community
Fan Stack	-	3,500	-	Packed and sent to be used by the community
Fill Drift	32,140	10,421	-	Packed and sent to be used by the community
<b>Total</b>	<b>46,996</b>	<b>28,756</b>	<b>13,650</b>	

## TOTAL FUND ALLOCATION

As a commitment to improving the quality of the environment, SEGWWL allocates funds for the implementation of various environmental preservation and protection programs. This environmental fund is included in funds allocated for Safety, Health, and Environmental (SHE) activities.

Total environmental fund for the operational year 2018 amounted to Rp 2,198,313,390; an increase of 0.43% compared to that of previous year, i.e. Rp2,188,849,135.

The allocated environment funds were used for numerous activities including:

- Environmental management and monitoring.
- B3 and non-B3 waste management.
- Revegetation and biodiversity enrichment.
- Workshop, campaign, training and dissemination of environment-related issues.

The efforts we take to preserve the environment and to comply with the applicable laws and regulations have fostered trust from various parties, local communities and especially the Government. During the reporting year of 2018, the Company did not receive any fines or violate any laws related to violations to environmental laws and regulations.

**[GRI 307-1]**

## AWARDS

SEGWWL's commitment to environmental preservation is realized through various policies and environmental programs that we carry out as optimally as possible, which exceeds the requirements set by the relevant laws and regulations. As a result, the Company is awarded a range of awards on the environment by the competent authorities. SEGWWL has participated in the PROPER program since 2004/2005 until now and has achieved:

- 8 green ratings
- 6 gold ratings

In 2018, SEGWWL again achieved the Gold PROPER rating for our efforts in environmental protection and community empowerment programs that were made beyond the expectation set in the related laws and regulations. With this GOLD PROPER achievement, the Company has now obtained GOLD rating for three years in a row, which is a totally rare achievement that our peers in the country can earn. This attainment is supported by technical advantages and managerial excellence that we have, such as:

- Integrated control system with zero venting concept, the first one in Indonesia.
- Application of real-time monitoring of emission debit.
- Utilization of condensate water for drilling processes, the first one in Indonesia.
- Community empowerment program of coffee nursery and eco-tourism.

Moreover, the Company implemented a quadruple-helix concept in the sustainable economic development sector, which is in cooperation with industry, scholars, the

Government and the communities for supporting economic and social development.

Our environmental protection and community empowerment programs comprise:

- WIP (Well Intervention Program), i.e. management of production wells so as to arrive at an optimum level through environmentally friendly methods.
- Sulfur control program in Cooling Water System.
- Green economy program, by initiating coffee production and monitoring through Cooperative of Desa Margamulya.
- Community education improvement, in cooperation with Rumah Pintar through its programs.

SEGWWL is committed to continuously maintaining our achievements in the environment and community sector, considering the importance of preserving the earth for the next generations. We are aware that this Company's sustainability depends on our investments and efforts in preserving the earth.



4

# Developing and Improving Community Welfare

THROUGH OUR CORPORATE SOCIAL RESPONSIBILITY ACTIVITIES, WE SHOW OUR FULL COMMITMENT IN IMPROVING THE LIVING STANDARD AND WELFARE OF THE COMMUNITY AS ONE OF THE STAKEHOLDERS. OUR CSR AGENDA INCLUDES COMMUNITY EMPOWERMENT PROGRAMS AIMED AT GROWING AND DEVELOPING THE SURROUNDING COMMUNITY IN LINE WITH THE INCREASING BUSINESS SCALE OF THE COMPANY IN ACCORDANCE WITH THE NATIONAL DEVELOPMENT GOALS THAT ALIGN WITH GLOBAL SUSTAINABLE DEVELOPMENT GOALS (SDGS).

## BACKGROUND AND PURPOSES

[GRI 103-1, GRI 103-2]

The idea of corporate citizenship, or corporation as a “member” of the society that is vested with rights and responsibilities, is growing and becoming increasingly popular in this globalization era. One of the corporation’s rights as a “citizen” of the society is to carry out economic-oriented activities in its daily operations, while its obligation is to participate in achieving sustainable development goals, i.e. to create social well-being and improve the quality of life of the surrounding community through Corporate Social Responsibility (CSR). Continuous implementation and professionally-managed CSR programs is a manifestation of the company’s concerns for realizing human resources (people) and environmental (planet) development through part of its profit earnings.

CSR is not new to SEGWWL. We have implemented various CSR programs even before the Government of the Republic of Indonesia enacted Law No. 40 of 2007 on Limited Liability Companies which emphasizes the obligation to implement CSR programs (Article 74 paragraph 1), complete with sanctions for those who fail to comply. We view CSR activities as an investment

with the goal of providing sustainable benefits to all stakeholders, not just to make profit for the company. Through CSR, we show the company’s social care to realize social welfare of the surrounding community in line with the development of the company’s business.

The implementation of SEGWWL’s corporate social responsibility (CSR) program is primarily intended to:

1. Play an active role in supporting government programs in increasing HDI (Human Development Index) specifically in Pangalengan District and generally in Bandung Regency with an emphasis on education, empowerment and improvement of the community’s green economy, as well as environmental health and protection.
2. Establish and maintain good communication and relationships with the community, community leaders, religious leaders, government and related agencies.
3. Continuously participate in improving the quality of the community’s social welfare as a form of social responsibility.
4. Build, rehabilitate, and improve facilities and infrastructure to support the acceleration of people’s welfare and living standard.

## POLICY AND APPROACH

[GRI 103-2, GRI 103-3]

### General Policies of CSR Programs.

General policies of SEGWWL's CSR implementation are as follows:

- SEGWWL is committed to performing its social care role responsibly and continuously with a priority to give significant contribution in a balanced manner for all stakeholders.
- SEGWWL takes the initiative to focus on developing social and economic aspects of the society and fostering harmonious relationships to create positive and sustainable impacts for the surrounding community through the implementation of Corporate Social Responsibility (CSR) programs that always adheres to its Guiding Principles.
- SEGWWL applies Good Corporate Governance ethics and strives to continuously ensure that operational activities are carried out in line with legal, ethical and professional standards and foundation that we always uphold. Everything that SEGWWL does in its operations is always carried out with honesty and with high integrity.
- SEGWWL is highly committed to building and maintaining sincere and fair relations with government agencies,

community leaders, colleagues, community organizations and other relevant parties.

### CSR Program Approach

SEGWWL emphasizes community development, empowerment & capacity building approach in the implementation of CSR programs. This approach encourages active participation of each community member in finding solutions to the problems they face. Through this approach, it is believed that the community will feel more empowered and confident, so that they are able to optimally develop through various CSR programs that are jointly designed to solve shared problems together, which is also carried out and evaluated together with all the relevant community members. In the end, it is expected this can reduce their dependency on external parties.

This community empowerment approach is believed to be able to increase Human Development Index (HDI) more effectively, in line with SDGs in the SEGWWL's operational area, and create a more prosperous and independent community. In its application, we have developed a framework through the following processes which we believe will suit the conditions faced:

#### ASSESSMENT TO CSR

- Establishing CSR management team
- Formulating CSR program definition
- Identifying and involving key stakeholders

#### CSR STRATEGY DEVELOPMENT

- Creating support from senior management and employees
- Observing stakeholders
- Preparing the matrix of CSR activities that are proposed
- Developing options for sustainable CSR program

#### DEVELOPING CSR COMMITMENT

- Discussing with key stakeholders
- Making a work group for raising commitment
- Consulting with the impacted stakeholders

#### CSR COMMITMENT IMPLEMENTATION

- Building an integrated CSR decision making structure
- Setting measurable targets and identifying performance evaluation
- Involving employees and/ or other parties targeted by the CSR programs
- Making internal and external communication plans

#### VERIFICATION AND REPORT OF PROGRESS

- Measuring the performance of CSR program implementation
- Measuring the impact based on the program plan

#### EVALUATION AND IMPROVEMENT

Tracing the progress of CSR approach so that it would serve as the basis for improvement and modification



Our community development and empowerment programs are carried out in accordance with the achievement of various development goals in the formulation of the Sustainable Development Goals (SDGs), namely:

- 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.

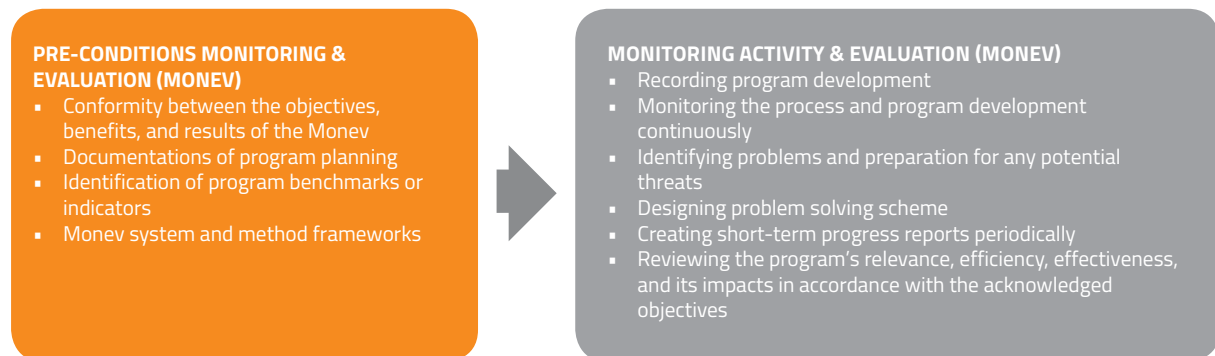
In other words, we perform CSR programs as a corporate tool in contributing to improving the conditions of social welfare, education, economy and the health of the surrounding community.

All the development, empowerment and capacity building programs that are carried out are directed to obtain maximum

results, namely improving the social welfare of the community through education, economy, environmental health and protection, and infrastructure development. To that end, the company also carefully measures the success of these programs using development parameters annually issued by the Statistics Indonesia, namely Human Development Index (HDI).

In addition, we have also set measurements using internal mechanism. SEGWLL's strong commitment to create social welfare in an appropriate and directed manner is also realized by opening communication channels and feedback from the program's beneficiaries. The implementation of various measurement and feedback systems is intended to evaluate and improve the efficiency and effectiveness of CSR program implementation.

The following chart is the process of monitoring and evaluating the application of SEGWLL's CSR programs.



SEGWLL's CSR implementation aims to improve Human Development Index (HDI) of Pangalengan District, which is located in the company's operational area. HDI is a comparative measurement of three basic dimensions, which include long and healthy life, knowledge, and a decent life. Each dimension is represented by various indicators that apply to all countries in the world. According to data from the Statistics Indonesia in 2017, the HDI of Pangalengan District was 76.41, which was not much different from the HDI of Bandung Regency of 76.45. This means that HDI of Pangalengan District is above the average of the National HDI (2018) of around 73.13. Despite this fact, the company is fully committed to continuously improving Pangalengan District to become the most progressive and prosperous district as we strive to increase the level and quality of life of its people through the realization of our CSR programs.

## PROGRAM DEVELOPMENT [GRI-413-1]

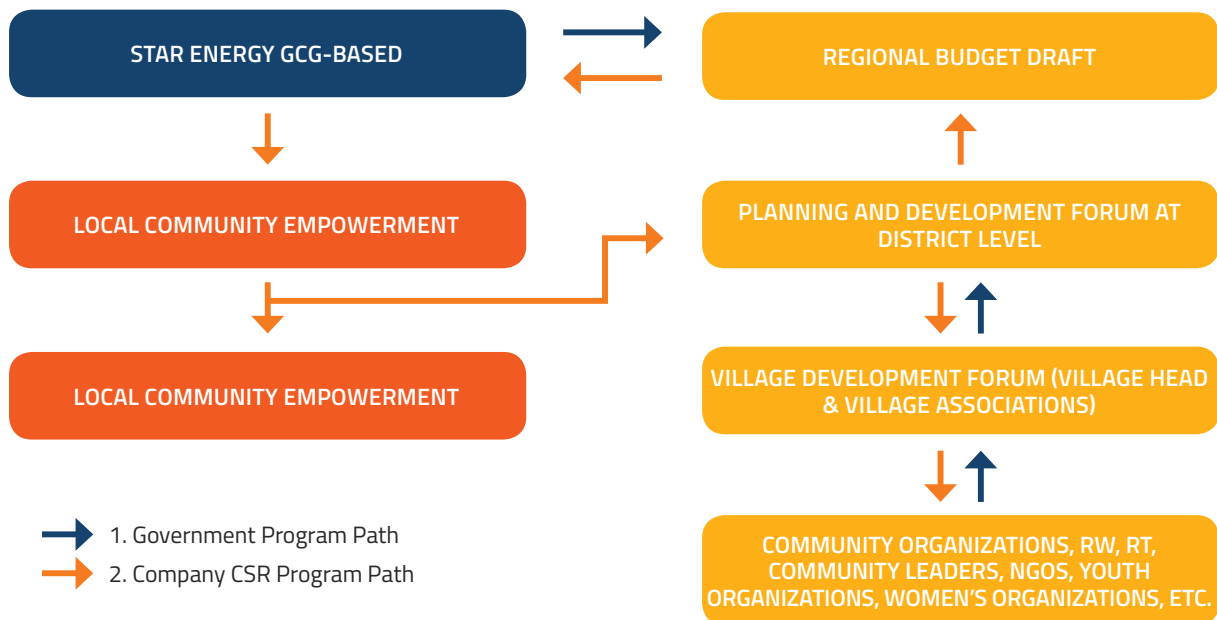
In order to optimize the success of the program implementation, the company conducts regular social mapping to understand the community's needs and develop on-target program. We adopt Quadruple Helix as a model of CSR Program approach where the company always ensures that community engagement is the subject of the program, in cooperation with the government and academicians.

Through this collaboration, we expect to produce a measurable community development potential program plan where we can calculate the possibility of its successes and failures to be appropriately anticipated. This way, it is hoped that the program can be implemented optimally and continuously, as well as immediately provide benefit to the stakeholders.

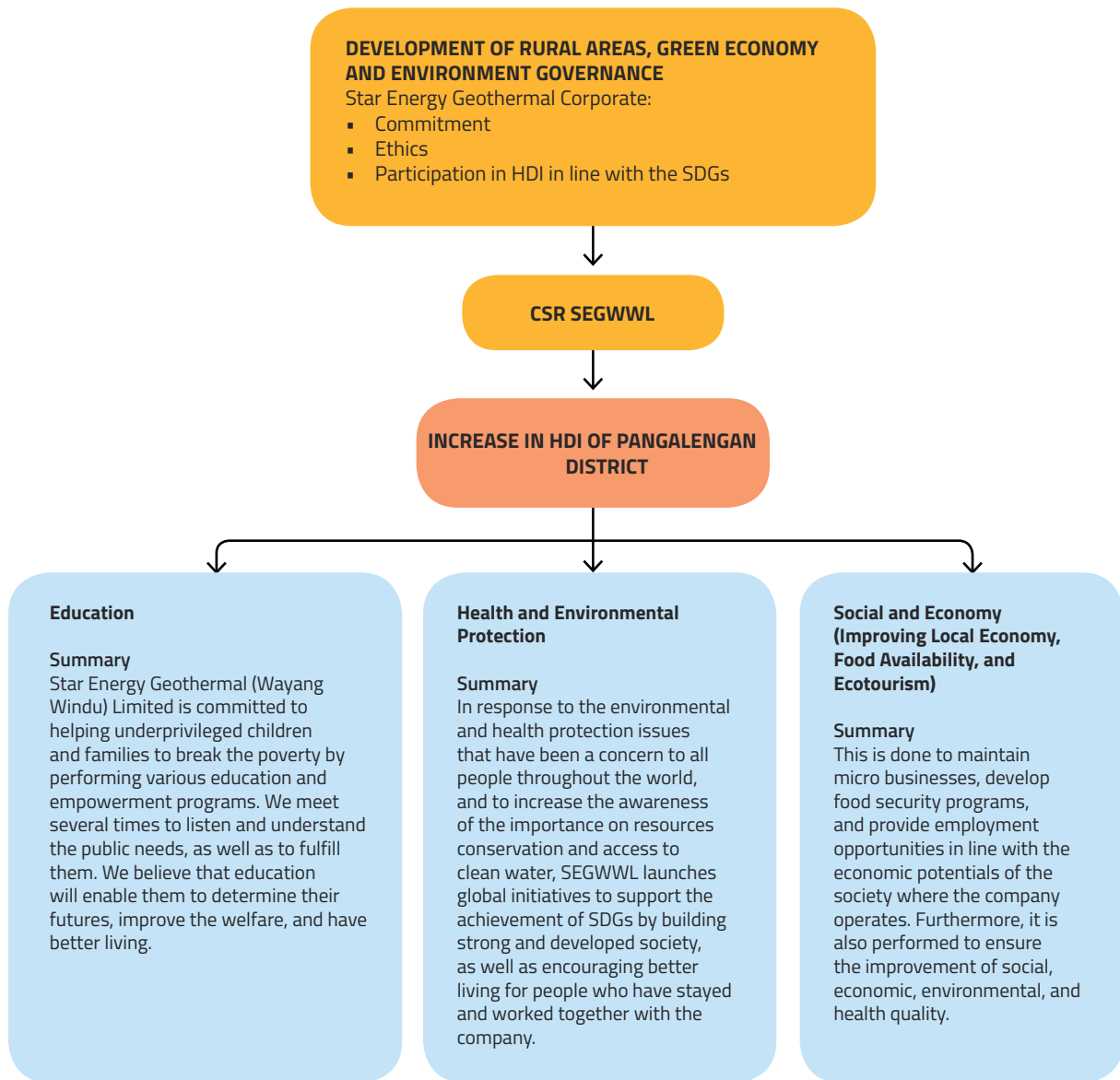
The Company also targets to minimize social impact from its operational activities, such as changing pattern of interaction between employees and the surrounding community that can last throughout the day, according to the nature of the Company's operational activities. To reduce this, the Company imposes restrictions on hours of exiting operational areas and provides decent accommodations for employees in the field.

Meanwhile, the growing awareness of women to help support financial needs of their families, along with the increasing job opportunity for them, is another social impact from our operations that we need to accommodate. Gender-wise, the Company has specifically developed social responsibility programs to address that need so that both women and teenage girls can optimally participate in supporting their families. The Company has even made health improvement of mothers and women empowerment as a priority and one of our flagship programs.

## STAKEHOLDER INVOLVEMENT



Starting in 2017 and continuing in 2018, the company has designed and developed CSR programs in three categories: Education, Environmental Health and Protection, and Economic sectors. HDI increase of Pangalengan District also remained one reference to measure the success of CSR programs. These three sectors are illustrated in the following chart:



Basically, these programs are aimed at community empowerment and development. To ensure its smooth implementation, the company annually allocates a number of community development funds which will be adjusted to the intensity of the program and the company's ability. In 2018, the company spent around Rp3.8 billion of CSR funds with the following allocation details:

**Details on the Use of CSR Activities in 2017-2018**

Program/Activity	Total Spending (Rp Million)	
	2017	2018
Community Relations & Stakeholder Engagement	876.88	556.53
Community Development (Education, Environment Health Safeguard & Economy)	2,913.09	3,318.62
<b>Total</b>	<b>3,789.97</b>	<b>3,875.15</b>

The community empowerment programs that we implement aim to:

- Play active role in supporting the government's programs, especially in increasing HDI (Human Development Index) with emphasis on the implementation of activities in the following fields:
  - >> Knowledge or Education,
  - >> Decent life or Community Economic Empowerment and Improvement,
  - >> Environmental Health and Protection, and
  - >> Improvement of Social and Public Facilities Infrastructure
- Establish and maintain good communication and relationships with the community, community leaders, religious leaders, government, and related agencies.
- Participate in improving the quality of welfare and social life of the community as a form of social responsibility.
- Reduce poverty and unemployment rates around operational locations.

- Restoration and conservation of buffer zones to protect water source areas and critical land as an effort to manage the environment for the social welfare of local communities.
- Bring access to quality formal and non-formal education, especially for children and teenagers.
- Increase spirituality/religiosity by establishing and improving places for worship facilities.
- Build infrastructure, including free electricity facilities to help improve the economy of the poor as part of the efforts to realize economic growth, social justice, spread of knowledge, and even electricity distribution for all.

Summary of the Company's CSR work program in 2018 is as follows:

**Table of CSR Work Program Summary 2018**

Program	Objective	Activity	Target	Indicators
<b>EKONOMY</b> Integrated Mushroom Farming Based on Environment Friendly	To create 1 environmentally friendly oyster mushroom business group	Building production house	Desa Pulosari Communities	There is one representative environmentally friendly oyster mushroom production house
		Producing quality baglog (10,000 baglog increase/year)	Desa Pulosari Communities	Baglog production increases by 10,000/year
		Converting baglog waste into an environmentally friendly energy source (E-Ramli) (purchase of baglog chopper machines, wood pellet machines, wood pellet stoves, waste treatment house installations)	Desa Pulosari Communities	Baglog waste is used as an environmentally friendly energy source through wood pellets
		Preparing licenses for business	Desa Pulosari Communities	Mushroom Agrifarm Villa has CV as legal status

Program	Objective	Activity	Target	Indicators
<b>EDUCATION AND ECONOMY</b> Green Economy Saba Desa: Literacy Platform and Sociopreneur	To increase interest in reading and entrepreneurship of people of Pangalengan District	Performing literacy activities in 3 villages (learning to read, count, write, and communicate well, as well as learn about local food security)	Desa Margamukti, Desa Sukamanah, Desa Pangalengan Communities	Pabukon Saba Desa participates in the government's effort to eradicate illiteracy in 3 villages in the District of Pangalengan
		Adding book collection in Saba Desa library	Desa Margamukti Communities	Collection of new books can increase the public's reading interest
		Performing paranggong repair and land rent	Desa Margamukti and Desa Margamekar Communities	Chayote crop increases every harvest time and provided benefits to the mentored farmer
		Expanding land area, purchasing super breeds and building ornamental chicken coops	Desa Margamukti Communities	There are representative chicken coops to support breeding
		Renovating TBM building	Desa Margamukti Communities	TBM building becomes representative
		Addition and renewal of hydroponic installations (purchase of nutrition, rock roll, circulation, bamboo fence, seeds, and 5-liter containers for nutrition)	Desa Margamukti Communities	There are new hydroponic installations
<b>ECONOMY</b> Development of Cooperative Based SMEs	To develop optimum businesses of SMEs Cooperative	Preparing an MoU with tour operators in Pangalengan District	Pangalengan District Communities	There is a clear collaboration between the Nurkayana Cooperative and the tour operators, especially in terms of profit sharing
		Increasing the number of and repairing Cultuur Kopi facilities	Desa Pangalengan Communities	There is a busy cafe visited by coffee lovers
		Basic sewing course	Pangalengan District Communities	There are 12 sewing course alumni that are able to open their own businesses or work in the convection industry
		Graphic design course	Pangalengan District Communities	There are 5 graphic design course alumni capable of opening their own businesses or work in the multimedia industry
		Building PPOB (Payment Point Online Bank) business unit	Desa Pangalengan Communities	Nurkayana Cooperative has potential business
		Business management and tourist guide training	Desa Pangalengan Communities	Tourism sector is able to provide economic potential for Nurkayana Cooperative
		Promotion of Pangalengan as a tourist area	Pangalengan District Communities	Increase tourist visits to Pangalengan
		Making distribution of Pangalengan tourist maps	Pangalengan District Communities	There is a complete tourist map in terms of content and tourist information
		Improving packaging for 3 superior products of Nurkayana Cooperative	Pangalengan District Communities	There are 3 products that have attractive packaging

Program	Objective	Activity	Target	Indicators
		Facilitating provision of nutritional content and product expiration information	Pangalengan District Communities	There are 2 Nurkayana Cooperative products which have information on nutrition content and expiration information
		Making product brochures for members and cooperatives	Pangalengan District Communities	There is complete information about Nurkayana Cooperative products
		Making Nurkayana goody bag	Desa Pangalengan Communities	There is a goodybag that characterizes the partnership between the Nurkayana Cooperative and SEGWWL
		Pioneering incubation of dodol kopi	Desa Pangalengan Communities	There is 1 typical superior product in Pangalengan
		Leasing cooperative office	Desa Pangalengan Communities	There is 1 representative Nurkayana Cooperative office
		Internet facilities	Desa Pangalengan Communities	There are internet facilities for office operations and to attract Cultuur Café customers
<b>TOURISM</b> Developing Community-based Pangalengan Ecoventure Sport	There is 1 Ecoventure Sport community that utilizes Pangalengan nature as a business in outdoor tourism	Renting an APA Secretariat office (2 years)	Desa Pangalengan Communities	There is 1 representative secretariat office
		Preparing licenses to conduct tourism business	Desa Pangalengan Communities	There is a complete licenses for tourism business
		Promoting outdoor tourism	Bandung Raya Communities	Increasing the number of ecoventure sport tourists
		Certification of marshall / tour guide	Desa Pangalengan Communities	There are 5 certified marshalls/tour guides
		Procuring operational support facilities	Desa Pangalengan Communities	There are decent operational support facilities
<b>EDUCATION</b> Disaster Education as a Pillar of Disaster Response	Pangalengan District as a resilient district	Disaster education	Desa Sukaluyu and Desa Warnasari Communities, Students of SMKN 5 Pangalengan	There are 50% of participants that understand disaster material
		Training on Disaster risk reduction, attended by Pangalengan District Scouts	Pangalengan District Scouts	There are 50% of participants that understand training material
		Disaster-Resilient Village Dissemination	Pangalengan District Communities	75% of participants understand the benefit of village resilience
		Disaster management training (refreshment) for MTB members	Pangalengan District Communities	There are 75% of participants that understand training material

Program	Objective	Activity	Target	Indicators
<b>ECONOMY</b> Coffee Farmer Empowerment: Education, Tourism and Specialty	To increase knowledge, income, and management of coffee cultivation for local coffee farmers	Physical development of the secretariat	Desa Margamulya Communities	There are representative secretariat facilities
		Purchase of production equipment (suton machines)	Desa Margamulya Communities	There is 1 set of suton machines
		Addition of Terrace Cafe facilities	Desa Margamulya Communities	There is sufficient product display space
		Member training	Pangalengan District Communities	There are 75% of participants that understand training material
		Upstream to downstream cultivation education for local coffee farmers	Pangalengan District Communities	There are 75% of participants that understand training material
		Upstream to downstream cultivation education for business players in the downstream field	Pangalengan District Communities and Business Players	There are 75% of participants that understand training material
		Business assistance	Pangalengan District Mentored Farmers	There are 75% of training participants that are able to understand the material presented and apply it to upstream to downstream coffee cultivation process
		Procurement of ecotourism facilities (stand tables, gazebos, and site maintenance)	Pangalengan District Communities	There is 1 convenient tourist facility
<b>EDUCATION</b> Star Super Class (Kejar Paket A, B & C for dropped out students)	To increase HDI of Pangalengan District >76,41	Building maintenance	Pangalengan District Communities	There are representative building facilities for learning and teaching activities
	To increase the number of years of schooling in Pangalengan District at > 8	Procurement of facilities (study chair, teacher's chair, blackboard, computer)	Communities and students in Desa Pangalengan	There are sufficient facilities to support learning and teaching activities
	To give opportunities for the public to complete a 12-year compulsory education	Supporting teaching and learning activities (midterm evaluation, USBN, UNBK, and context clues)	Communities and students in Desa Pangalengan	Good implementation of all competency tests

Program	Objective	Activity	Target	Indicators
		Dissemination of package A,B, and C education	Desa Pangalengan Communities	Participants of package A, B, and C education are screened
		Student graduation ceremonies	Students in Pangalengan District	Ceremonies are well implemented
		Honorarium	Desa Pangalengan Communities	There are incentives for tutors, administrators, cleaning staff, and administration staff
		Payment of utilities and services (water, electricity, and internet)	Communities and students in Desa Pangalengan	There are facilities to support learning and teaching activities
<b>ENVIRONMENT</b> Star Energy Care	Restoration and conservation of buffer zones to protect water source areas and critical land.	Open land conservation (planting of tree and vetiver plants)	Pangelengan District Communities	There are 7,000 vetiver plants and 1,000 crops
		Lake Leuweung Citere restoration (restoration of springs in plantation areas)	Pangelengan District Communities	Restoration of 17 springs
		Restoration of springs in WWA (restoration of springs in forest areas)	Pangelengan District Communities	Restoration of 2 springs
<b>FREE ELECTRICITY FOR VILLAGES</b>	Providing electricity facilities to underprivileged community to realize economic growth, social justice, spread of knowledge, and even electricity distribution	Installation of electricity lines to 102 underprivileged families	Desa Margamukti Communities	There are 102 underprivileged families that now have electricity



## Stakeholder Gatherings, Musbangdes, and Musrenbang as the Facilities to Involve the Society and Local Stakeholders [GRI-413-1]

One of the keys to successful implementation of public development program is active participation of the people as the subject that design the program, not merely object that receives the benefit of the program. Therefore, in designing and implementing all public development programs through the Corporate Social Responsibility (CSR), the Company endeavors to involve the people by conducting Focus Group Discussion (FGD), which is named as a Stakeholder Gathering, including formal meetings between the government and all stakeholders, known as Musbangdes (Rural Development Forum) and Musrenbang (Planning and Development Forum) both at the level of Subdistrict and Regent.

FGD Stakeholder Gatherings and Musrenbang are discussion forms for all parties to determine rural development programs, including the Company's CSR activities, which have direct relation to the fulfillment of the community needs. These forums involve the participation of the community, local government,

district government, other local government groups, NGOs, and representatives from the Company. The meeting agenda is to form a synergy in determining CSR Program and the program that is funded through the village funds or other development scheme by the local government.

After the proposed program is mutually agreed, a small committee is established to decide the technical implementation of the program, including supervising and evaluating the result of the program implementation.

The evaluation result on the program implementation will be discussed in a Musrenbang for the next period. The implementation of Musrenbang will create people's sense of belonging to the program, which will encourage them as the one who receives the direct benefit of the program to also participate in it.

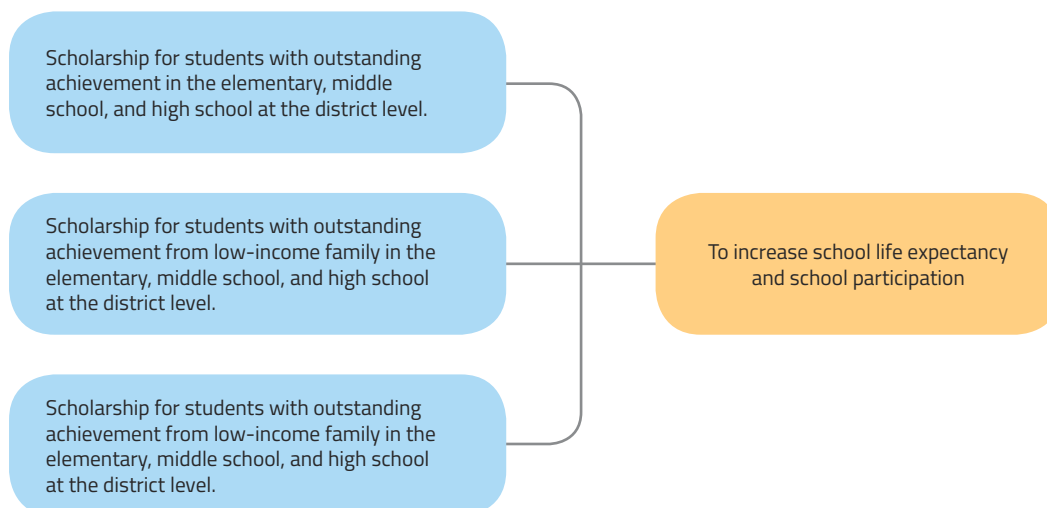
## EDUCATION DEVELOPMENT PROGRAM [GRI 203-1]

One of the dominant factors of poverty is the low level of education and school life expectation, which then leads to the “poverty cycle” syndrome. According to data from the Statistics Indonesia (BPS), the majority of inhabitants in six villages in Pengalengan are graduates of elementary, junior high and high schools. Some of them quit school due to limited finance to pay the tuition. This would lead to lack of competence and, consequently, limited work opportunities as one concrete form of that poverty cycle. To cut this down, the company has determined the realization of education program as its top priority.

Therefore, the company designs and realizes quality yet affordable education programs to create wider opportunities for these less fortunate people to access education in order to gain better jobs in the future. The education programs were started in 2013 and covers both formal and non-formal education. The education programs are categorized into two:

1. Formal Education, to increase school life expectation and school participation through the following initiatives:
  - a. Scholarship for students with excellent achievements.
  - b. Scholarship for underprivileged students with excellent achievement.
  - c. Full scholarship of secondary education (D III - D IV) at Bandung Polytechnic and Padjadjaran University to students listed on top 10 for 3 years in District level.
2. Non-Formal Education, to reduce illiteracy rates, increase primary & secondary graduation rates and build capacity through the following initiatives:
  - a. Kejar Paket A, B and C class, vocational education in Rumah Pintar as a means of non-formal education for marginalized communities in Pangalengan.
  - b. Literacy classes, kindergarten, and integrated community economic poverty alleviation activities through community organizations incorporated in Taman Bacaan Masyarakat (TBM) Saba Desa.

### SCHEME OF FORMAL EDUCATION PROGRAM IMPLEMENTATION



**Formal Education Program Planning And Implementation**

Based on the actual conditions, financial constraints, distance, and availability of facilities are still the main barrier for most people to obtain quality education. Therefore, we remain consistent in providing financial support in the form of scholarships to students in Pangalengan District. This scholarship to obtain proper education is specifically directed for students with high performance yet having limited finance and those who are very poor.

In 2018, SEGWWL provided scholarships to 1,505 elementary, junior high, high school/vocational school students as well as university students. It is hoped that through this scholarship, school life expectation and student school participation will increase, and that students are able to continue their education to a higher level in order to achieve a better future

to ultimately improve living standard of their families. The following is a table regarding SEGWWL formal education scholarship.

**Table - Recapitulation of Scholarshi Recipients at Elementary, Junior High School, Vocational/High School DIII - 2018**

Education Level	Outstanding Students	Students from Poor Families	Total
Elementary School	678	339	1,017
Junior High School	153	153	306
Vocational/High School	90	90	180
DIII /DIV	-	2	2
<b>TOTAL</b>			<b>1,505</b>



# Testimonial of SEGWWL Education Scholarship Grantee

## 1. Taufik Hidayat

I was one of the awardees of Star Energy's talented scholarship program since high school. I was very lucky to get such opportunity as my parents' lived in poverty. To fulfill the needs and cope with the economic condition, my parents worked as construction workers, while my older sibling helped the family by working as an ojek (taxi bike) driver.

Considering my family condition, since the middle school, I was determined to study hard, so I could win a scholarship. Alhamdulillah, I earned it when I was in high school, since the second semester at the first grade and after I was at the top ranks in the school. After high school, I also applied for the selection of Star Energy's talented scholarship for Diplomat program at Politeknik Negeri Bandung.

I obtained financial support which cover test fee, dormitory, and tuition fee during my study at PolBan. Alhamdulillah, I was able to finish my study with good rank and I landed a job at Samsung Electronics Indonesia, even before I graduated from the polytechnic program. Then, I continued my career at Astra International. However, after a few months, I decided to resign from the job to start entrepreneurship in oyster mushroom cultivation.

My pioneering business in oyster mushroom cultivation had experienced ups and downs because of the flood that hit the area. However, with the support of Star Energy and many parties that cared about my village condition, Pulosari, now, the business is developing and it succeeds to particularly elevate social and economic condition of my family, and 11 foster partners around our house.

Based on my personal experience, I am grateful that I can prove my faith that good education can stop the poverty cycle in our life. I would like to thank Star Energy for giving me the opportunity to raise the dignity of my family and the community around my house through its various CSR programs in education field, the provision of scholarship as part of CSR in the economic sector, as well as the economic empowerment program implementation. I really hope that the programs continue to run and be improved, so similar opportunities will be available for the next generation in Pangalengan so that they can develop and stop the poverty cycle. In the future, they can continue to work together and bring Indonesia forward.

## 2. Mohammad Azhar

I received Star Energy's talented scholarship for D3 administration program. After graduated, I felt compelled to participate in developing the tourism potentials around Pangalengan. The name of my ecotourism club is "Pangalengan Adventure", which has been fostered by Star Energy for the last two years.

I was very lucky and thankful to Star Energy for the scholarship program awarded to me. Thanks to the scholarship, I was able to continue my study to a higher level, so now I have sufficient knowledge to develop the tourism potentials in my place of origin, and to help my friends and families to earn additional income. Furthermore, Star Energy also helps me in marketing the ecotourism packages that we managed, including providing sponsorship in organizing certain events.

I believe that the activities that we carry out in promoting the ecotourism potentials in Pangalengan would produce many benefits in terms of economy, and also other specific benefits, namely well-preserved and improved quality of the environment around Pangalengan. I hope that Star Energy will still be committed to providing support for the development of education and economy of the community.

## 3. Risma Solihah

I was an awardee of Star Energy's talented scholarship from junior high to high school. Then, I also applied for the scholarship program for D-3 Accounting at Universitas Padjadjaran. Immediately after graduating, I felt that my passion was not working at the office, so I decided to apply as a teacher at SMA Negeri 1 Pangalengan to teach handicraft and entrepreneurship and at MTs Nurul Huda to teach math. I felt that by going back to Pangalengan as a teacher, I have practiced the knowledge that I have acquired, helped the next generation in my area to develop, and contributed to the development in that area as well.

Now, to comply with the requirement as a teacher, I continued my study to bachelor program at Universitas Terbuka majoring in Economic Education. Alhamdulillah, with the scholarship from Star Energy, I am able to grow as I am today. I hope that the program will be continued, so that talented students who are constrained by economic conditions can get the opportunity to move forward and develop themselves, and in the future, they are able to use their knowledge and skills for the nation advancement.

### Plan and Realization of Non-formal Education Programs

Started since 2013 and continues to the present time, SEGWWL views non-formal education as part of its CSR program. One of non-formal educational activities that we focus on is to reduce illiteracy rates and increase reading interest in the local community, considering that reading various kinds of information is one of the ways to gain knowledge to achieve success. A reading habit can also support the development of culture and local wisdom.

Therefore, we believe that this program has an important role in developing culture pocket that has strategic function in maintaining and developing socio-cultural values and local wisdom. There are several main activities that we carry out, as outlined in the following brief discussion.

#### 1. Taman Baca Masyarakat (TBM)/Saba Desa Program

Partnering with Karang Taruna Setia Bhakti of Desa Margamukti, with its continuous program of Taman Baca Masyarakat (TBM) Saba Desa, the company intends to eradicate illiteracy through a unique and creative method, namely through Education for Sustainable Development (EfSD). We will transform TBM activity into part of household revenue increase and environment conservation program – or 'green economy'.

In addition to learning and reading activities, other activities carried out as part of our cooperation with TBM-Saba Desa are as follows:

##### a. Community Radio 97.0 FM

From 8:00 AM to 7:00 PM everyday, the Community Radio 97.0 FM is on air with the program called "Curhat Literasi", which is aimed to create intense communication with the inhabitants concerning their problems and aspirations in elevating their quality of life. The program reaches 20 kampongs in Desa Margamukti and 10 kampongs in Desa Pengalengan. The visible impacts of the community radio include:

- High reading interest among the community
- Additional library members
- Effective and efficient library services
- Additional librarians
- People's aspirations in literacy are channeled.

##### b. Mobile Library Vehicle

The operation of mobile library vehicle aims to facilitate access to books for the community in order to accommodate their high reading interest. SEGWWL's Mobile Library presents quality books and information to the public with limited access or located far from the main library and Saba Desa literacy program services unit. The visitors and members of this mobile library have been increasing over the years. The mobile library circulates in:

- Posyandu at 26 RWs throughout Desa Margamukti from Monday to Thursday
- Schools, as a reference source, every Friday
- For private sector employees, plantation labor and farmers, every Saturday

##### c. KUBE (Social Assistance for Joint-Micro Business)

KUBE is one of the programs declared by the Ministry of Social Affairs of the Republic of Indonesia which is aimed to empower the underprivileged by providing business capital and managing the productive economy. Since 2017, organized by SEGWWL, "Ekonomi Hijau Saba" built a new business unit of KUBE, namely native and ornamental chicken farming, with Karang Taruna RW 18 of Loscimaung, Desa Margamukti. In addition to that, businesses that are still running are organic chayote cultivation and hydroponic farming. All KUBE's activities are implemented directly by referring to the bibliography and literacy.

#### 2. Rumah Pintar as a Non-Formal Education Inspiration House.

Rumah Pintar was inaugurated since June 2014 and is projected to become a place to hold non-formal education that is wide open to all levels of Pangalengan society. Rumah Pintar has five major activities which include a library center, play and game center, computer center, cultural arts and craft center. To support these activities, this building is equipped with various facilities, such as teaching aids, libraries and reading rooms, computers with free internet access, and others.

In 2018, Rumah Pintar held teaching and learning activities as well as training as follows: Star Super Class (Kejar Paket A, B, and C), USBN and UNBK training, computer courses, basic graphic design, as well as sewing training for people of productive age. Kejar Paket

A, B and C program is mainly targeted to dropped out students and generally to people aged 17-44 years old and from 13 villages in Pangalengan District who have dropped out of school.

## Testimonial of Head of Rumah Pintar – Mr. Sulistiono

Rumah Pintar (RumPin) has been initiated in 2014 by Star Energy, which is an informal education facility for underprivileged people around Pangalengan who drop out of school or do not have formal education due to limited finance and others. Through the teaching and learning activities at RumPin, they are able to finish Kejar Paket A, Kejar Paket B, Kejar Paket C, training for USBN and UNBK, basic graphic design courses, and sewing classes.

Through the programs of Kejar Paket A, B, and C, they are able to obtain diploma that is equal with the maximum level of SLA, which is very useful in applying for jobs, improving their careers if they have worked, or continuing their studies to a higher level if they are still in the age of students. Up to now, RumPin has taught more than 200 students. In 2018, the number of students in the programs of Kejar Paket A, B, and C, held every Saturday and Sunday, reached 180 people.

The entire operating expenses of RumPin are provided and fulfilled by Star Energy. As the board of Rumpin, we have routinely proposed budget and reported RumPin activities in each education period. Alhamdulillah, we feel that this program is really helpful for the community around Pangalengan District. Because of this program, they are able to obtain education to high school level, and finally earn diploma, which is very important to elevate their social and economic condition. We surely hope that the intensity of this program is increased, especially for the basic entrepreneurship skills, so that there will be more people that can have better life. Ultimately, one of the objectives of RumPin, which is increasing HDI of Pangalengan District, can be achieved, as indicated by the increased public welfare level.

## ENVIRONMENTAL HEALTH & PROTECTION PROGRAM

Clean environment and a healthy body is a prerequisite for everyone to do productive activities at any time. However, not all components of the society are aware of the importance of maintaining healthy lifestyle, and not all regions have in place environmental protection and healthcare services program. Therefore, SEGWWL is currently promoting environmental protection activities for the community with specific objectives, namely: improving and maintaining the environment including water sources, increasing the availability of raw water, building community capacity in terms of understanding and handling health-related matters and disaster, especially in the remote areas in Pangalengan District. We also encourage integrated social mechanism that will be created through the following programs:

### 1. Restoration Program and Environmental Conservation in Water Resources

This program, called Cinta Bakti Lestari, is held at Leuweung Citere and is a collaboration program between SEGWWL and Pecinta Alam Penelusur Belantara Tapak Tiara (PAPB Tapak Tiara) to support and fulfill two Global Sustainable Development Goals (SDGs) no 6 & 17 on Clean Water & Sanitation and Partnership through capacity and awareness increase of the community on new springs. It is expected that the restoration of Leuweung Citere spring is successful to make it a new source of raw water that can also prevent illegal logging and agriculture.

Accumulatively, 172.8 m<sup>3</sup> of water every day or equal to 5,184 m<sup>3</sup>/month flows from Leuweung Citere spring, which is estimated to be able to meet the needs of 2,880 people in 3 (three) villages, namely Margamukti, Pangalengan and Margamulya.

The clean water potential can be utilized by the community around Situ Citere. Mathematically calculated, people can save to Rp. 321,594,000/year if they obtain clean water from Situ Citere, with an assumption that they do not bear any costs when consuming clean water from Situ Citere. This calculation is based on Situ Citere's ability to serve the community, which is 494 families/month.

### 2. Building Disaster-Resilient Villages and Strengthening the Capacity of Disaster-Resilient Community Organization (MTB)

Disaster-Resilient Community (MTB) is a community organization established by the Company to ensure and help the community prepare and raise their awareness of threat from natural disasters. People of Pangalengan District need to be always on alert since Pangalengan area is surrounded by three active volcanoes. Training materials given include first aid, methods for evacuating disaster victims, coordinating with related institutions, procedures to collect data and information management, raising and distributing aid. MTB currently has around 40 active members out of a total of nearly 130 members from 13 villages in Pangalengan District.

Through this organization and program, people are trained to be able to assess disaster risk-prone points and vulnerability, determine safe zones as evacuation destination, as well as conduct self-evacuation before external assistance arrives. No less important is also to improve lifestyle to mitigate disaster risk. The capacity and performance of the MTB members was tested when there was landslide in Cibitung in 2015.

Over the course of 2018, in addition to holding a simulation of strengthening and managing disaster risk by creating a "Disaster and Environment-Resilient Village" in Sukaluyu village, Desa Pangalengan, which was also attended by students of SMK N 5 Pangalengan, we also consistently disseminated MTB program to 13 surrounding villages. The Disaster-Resilient Community Training (MTB) has produced MTB cadres who continue to actively disseminate the importance of MTB vision and mission. In addition, "Disaster-Resilient Village" was then formed in Desa Lamajang as a result of MTB collaboration with village officials and the community.

### 3. Public Health Program

Considering close relation between health and productivity, SEGWWL runs various CSR programs in the health sector through the construction of various healthcare support facilities, posyandu, and the realization of health programs, including: routine medical check-up and free treatment for the poor, nutrition and health check-up of pregnant and breastfeeding women, infectious disease prevention program, and so on. These programs are implemented in cooperation with the local Regional Government.

## DEVELOPMENT AND EMPOWERMENT OF GREEN ECONOMY

In the economic field, the company introduces Green Economy as a vision of CSR Synergy Program through which we strive to contribute in improving public welfare and life quality of Pangalengan people by conducting economic activities that prioritize environmental conservation, which are important to sustain the life of the future generation of Pangalengan communities.

In this program, the company strives to support the society to optimally tap into their potential to grow and develop in order to be able to maximally utilize the available resources around Pangalengan, including its climate condition and natural resources, both independently and through a cooperative. Since 2017 and continued in 2018, the Company has fully supported the development of oyster mushroom cultivation potential, which was initiated by one of the alumni of the D-4 excellence scholarship awardees.

The Company also supports the development of tourism potential and destination in Pangalengan District by pioneering eco-venture, which involves the participation of mountain bike community, the Pangalengan people, and alumni of SEGWWL scholarship awardees. The Company is also continuously committed to supporting the development of cooperative-based micro economy, through Nurkayana SME Cooperative.

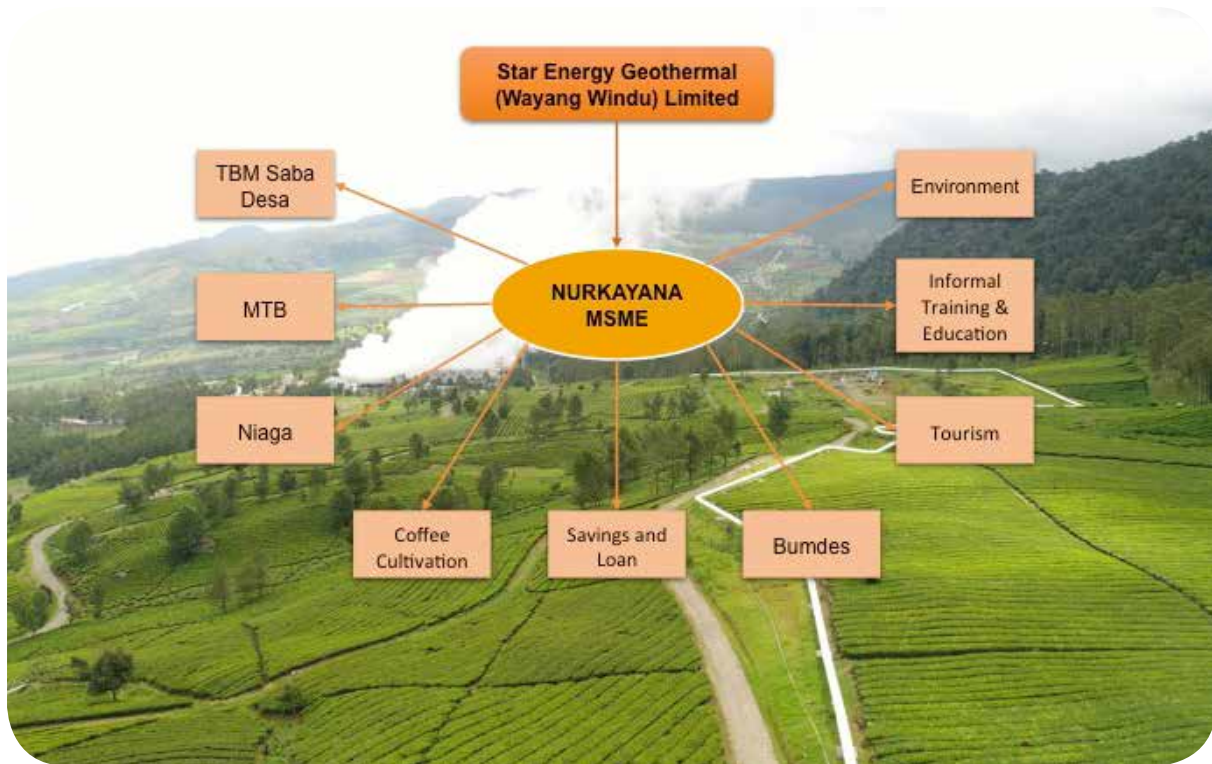
### 1. Nurkayana SMEs Cooperative

As one of the SMEs cooperatives that we form and develop, this cooperative has a central role as one of the integrated main economic players. In accordance with its purpose, we encourage Nurkayana Cooperative to continuously share the knowledge acquired during the entrepreneurship training to SMEs in the Pangalengan District. The activities carried out by Nurkayana SME vary, including establishing cooperation with the tourism operators in Pangalengan District, organizing basic sewing courses, graphic design class, establishing Payment Point Online Bank business unit, initiating the production of dodol kopi, and supporting the products of cooperative members by making brochures and extending marketing scope.

Up to the end of 2018, there were at least 88 members of Nurkayana cooperative. All cooperative members can discuss and share their thoughts at all time to explore the development potential of each business performed by the members. Through routine discussion forums, the participants can gain new ideas and breakthroughs to develop their business and improve its management.

The following is a brief explanation on the development of each economic empowerment program carried out in the form of cooperation through Nurkayana SME Cooperative and business development that is conducted independently, but still supported by SEGWWL.





Nurkayana UMKM Development as the backbone of a sustainable community economic program.

### 1) Galeri Niaga (Commerce Gallery)

Nurkayana SME has established Galeri Niaga as a facility where the members showcase their business products. The Gallery is in Nurkayana Cooperative's office area. In each booth of product display, there are officers who will clearly describe the products' features. In addition, there will be well-designed and attractive information label regarding the products.

### 2) Coffee Cultuur

Coffee Cultuur is a place dedicated for enjoying the globally known coffee originating from Mount Tilu, which is known as 'A Cup of Java'. The Copy Corner was established by SEGWWL in cooperation with Nurkayana UMKM Cooperative to promote the Coffee from Mount Tilu.

The concept developed in Coffee Cultuur is a place dedicated for enjoying the globally known coffee originating from Mount Tilu, which is known as 'A Cup of Java'. Coffee Cultuur features relaxing ambience for enjoying coffee with professional coffee serving and brewing. The market segment of this coffee shop is coffee

enthusiasts from Pangalengan and beyond. Specifically, the target customers are students, Nurkayana guests, and SEGWWL visitors.

Indulging coffee at Coffee Cultuur brings special delight, as the experience will be complemented with refreshing nature, sometimes along with a thin fog. Coffee Cultuur is located on the premises of Galeri Niaga.

### 3) Tourism Networking

SEGWWL cooperates with Nurkayana Cooperative to establish Tourism Networking to create networks among tourism business operators in Pangalengan District. The establishment will further develop the tourism potential in Pangalengan. Thus, Nurkayana can serve as an information center that meets the needs of the tourists coming to Pangalengan. From this network, it is expected that tourism activity can apply the same standard, starting from the completeness of facilities and infrastructure to evacuation procedures in case of emergency.

# Success Stories of Nurkayana Cooperative Members

## 1. Supriadi – Stories of Success Nurkayana Cooperative

Since 2000, Pak Supriadi started his business in producing shopping baskets using rattan and bamboo. However, Pak Supriadi now produces the baskets using fiber waste, which is the waste of polyester fabric production in the form polyester fibers. Furthermore, Pak Supriadi also provides trellis, or locally known as “seumat”, to support vegetable plants, such as tomatoes and chili.

In one monthly production, Pak Supriadi is able to absorb 2 tons of polyester fabric waste. The products of shopping basket and seumat are marketed in Pangalengan to Lembang with direct payment. The advantages of Pak Supriadi’s shopping basket and seumat are that they are more durable and can be used for several vegetable planting cycles.

The marketing of Pak Supriadi’s products is supported by the Committee of Nurkayana Cooperative. Meanwhile, the working capital and initial investment capital were supported by Nurkayana. The entire Pak Supriadi’s outstanding loan is in a current condition. Currently, Pak Supriadi employs 8 direct employees, besides marketing

personnel in other areas. The monthly turnover is around Rp15 – Rp25 million. He hopes that the waste utilization business will be continuously improving and supported by the appropriate yet simple technology development program to drive production increase.

## 2. Haji Aki Acin – Manufacturers of *Keripik Geprek Singkong* (Cassava Crushed Chips)

Starting his business in 1996, Haji Aki Acin has produced the cassava crushed chips to be sold up to Ciwidey and Majalaya. Cassava as the raw materials can only be obtained from the border of Pangalengan–Garut; every production needs a maximum of 3 tons of cassava supply/month. Due to the limited supply, Haji Aki Acin cannot increase his production capacity, and is not able to fulfill the order from Yogja Department Store in Bandung.

In the future, Haji Aki Acin will try different marketing approach, which is emphasizing on the distinction as a result of the limited raw materials and production quality. Nurkayana has supported business by providing packaging designs and marketing. The number of direct employees that can be absorbed by this small industry is 6 people.

### 3. Pak Yana and Pak Nana

They are manufacturers of miniatures of all toy models and music instruments, with main tourism destinations in Indonesia as their marketing area, such as Yogyakarta and Bali. Nurkayana, together with Star Energy, helps a lot in terms of providing working capital when there are orders in large number. The current business trend is decreasing due to the domestic social political condition amidst the campaign period for the legislative and presidential election. Such condition has quite an impact to the tourism development. Pak Yana and Pak Nana believe that the condition will be better as proven in the previous period where the number of tourists increased as social political condition in the country was conducive.

### 4. Iman Suryadi - Under Tower Garment Business

Pak Iman has started this business since 2011. Up to now, Pak Iman has obtained capital support for at least 6 times from the Nurkayana SME Cooperative. The entire loan terms have been completed. Before becoming a member of Nurkayana Cooperative, Iman Suryadi was a garment businessman who specialized in making jackets and T-shirts. After receiving revolving capital funding assistance from SME Nurkayana and participating in entrepreneurship training and mentoring, now Iman's garment business has grown and is able to hire 4 permanent employees, with 3 sewing machines, 1 embroidery machine, and 1 overdeck machine. Besides working on jackets and T-shirts by order, Iman has already marketed his own brand name, Under Tower, whose products are sold under a consignment scheme.

Since 2016, Iman Suryadi has been involved as a tutor as well as a trainer in basic sewing skills training, which is a collaboration between SEGWWL and Nurkayana SME Cooperative and Rumah Pintar Pangalengan. Going forward, Pak Iman is determined to increase his consignment sales program with the Sharia-based pricing.

## 2. Pangalengan Adventure Ecoventure – Integrated Tourism of Pangalengan

Situated near three volcanoes and exposed to fresh air and green landscapes, Pangalengan is a nice place for vacationing for both local and international tourists. Not far from Pangalengan, there are attractive tourism destinations, including: Situ Cileunca Lake, tea plantations, hot springs, camping ground, and hiking sites around a natural forest, waterfall, and others.

To develop and maximize the natural adventure destination or ecoventure, SEGWWL cooperates with the organizing community and local tour guides, i.e., Pangalengan Adventure. This is done to improve the social welfare of the people around the tourism destination.

For future development, it is targeted that the people is able to capitalize the natural resources of Pangalengan as a natural-based tourism business, which will continuously increase the economic condition of the local people. The tourism packages managed by them include camping ground, hiking, bike trails, rafting, and boat in Cileunca Lake. In order to develop the potentials of ecoventure, SEWWL and the related community attempt to obtain tour guide certification and develop more representative management office.

## 3. Ambeu Preanger Community – Mentoring, Counseling, and Strengthening Production Governance and Sustainable Coffee Marketing

SEGWWL together with several foster coffee farmer communities and local coffee business players in 2017 established the Ambeu Preanger Community. The objective of this community is to build a partnership among coffee farmers, coffee enthusiasts, and coffee business players to grow society-based economy, especially in the development of coffee cultivation management, commerce, training, tourism, environment, and other activities in line with the local potentials and

green economy; this is elaborated under the name of “Eco-Tourism Java Preanger Field Camp”.

The program objectives are:

- a. Building a partnership between coffee farmers and business players to grow and improve society-based economy, especially in the development of coffee cultivation management, strengthening of coffee farmers’ capacity, coffee commerce, training, and other activities in line with the local potentials and green economy.
- b. Creating systematic and sustainable activities for distribution of knowledge and insights on premium grade and specialty Arabica coffee (particularly Arabica Java Preanger) to develop economy and human resources capacity for farmers in Pangalengan District.
- c. Improving service and good governance in the management of environment and coffee raw materials produced in Pangalengan District.
- d. Ensuring the maintenance and management of coffee plantation governance, so that Pangalengan can have ecotourism destination potential, which may add to source of income of coffee farmers.

### THE BIRTH OF NEW SOCIO-ECONOMIC INSTITUTIONS



In 2018, various activities to support the development of business and community were performed, including:

- Procurement of representative joint secretariat facilities for coffee farmers, business players, and businessmen.
- Development of display room for coffee products in plantation area around Pangalengan.
- Procurement of 1 sutton machine to process coffee.
- Organization of various training programs for coffee cultivation, trading, management of special cafes for coffee enthusiasts and others, with the target of 75% of participants able to understand and apply it.
- Development of natural tourism related to coffee cultivation and processing.

## Ambeu Preanger Community – To Globalize Pangalengan Coffee

Ambeu Preanger Community continues to innovate to increase the popularity of Pangalengan Arabica Coffee in Indonesia and abroad, particularly in countries where many of its people are coffee enthusiasts. Members of Ambeu Preanger Community have been able to process coffee from the upstream to the downstream, so there is a unique quality taste based on the type of coffees and processing. Arabica Coffee from Pangalengan has certain uniqueness as it is planted above 1,100 MASL. This coffee knowledge is not just left in vain, yet it is shared by the Ambeu Preanger Community to local coffee farmers through 3 M system, which are menanam (planting), merawat (maintenance), and memanen (harvesting). The world needs quality and it is realized by Ambeu Preanger Community; thus, the

Community fixes up the upstream sector by educating local farmers so they will understand the appropriate and accurate coffee planting.

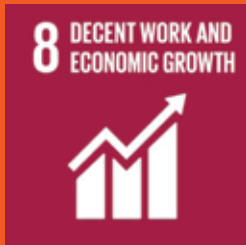
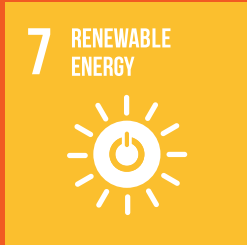
Most of the members of Ambeu Preanger Community have been certified by Lembaga Sertifikasi Profesi - Kopi Indonesia (LSP-KI) as baristas and examiners for taste and processing technique competence at the downstream sector. Such potentials are among the excellence of Pangalengan coffee, other than the condition of natural resources that are appropriate for coffee planting. Improvement of human resources is highly important to explore more of the potentials of coffee, as the farmers are the real spearheads in globalizing Pangalengan coffee.

#### 4. Bringing Hope from the Development of Oyster Mushroom Cultivation Entrepreneurship

The cool mountainous climate condition actually has been known to have various agribusiness potentials, one of which is oyster mushroom, an agriculture product that is known to have good nutrition and fiber content for the health. The huge potential of oyster mushroom agribusiness in Pangalengan has currently and subsequently manifested in the establishment of Integrated Mushroom Farming in Desa Pulosari.

An alumnus of D-4 SEGWLL scholarship awardees, named Taufik Hidayat, is the one who has explored the potential. It has been initiated since the last several years. After deciding to resign from one of the largest companies in Indonesia, Astra, Taufik, a native of Desa Pulosari, developed an oyster mushroom cultivation business independently. Due to the support and cooperation with SEGWLL, the business has rapidly grown into Villa Mushroom Agrifarm and contributes to elevate the live of people in Pulosari.

# Eco-Friendly Cultivation of Oyster Mushroom



## Mutually creating benefits

It is a new source of economy & jobs and an alternative for eco-friendly home cultivation. It also minimizes the forest encroachment.

SEGWWL's CSR programs are always consistently designed to support and respond various issues of the Sustainable Development Goal (SDGs), including point 7 and 8 regarding affordable and clean energy and decent work and economic growth. The consistent CSR programs are realized in, among others, the full support for the development of Eco-Friendly Cultivation of Oyster Mushroom (BU RAMLI).



The basic concept performed is supporting the development of Eco-Friendly Cultivation of Oyster Mushroom from the upstream to the downstream by the business group of Villa Mushroom Agrifarm. This development is carried out in Desa Pulosari, which is ± 10 km away from the Company's location (Ring II).

The main initiator and player in this business is Taufik Hidayat, one of the recipients of capacity strengthening program in education through SEGWWL achievement scholarship in 2011. He dreamed to develop society-based economy for the community near his house by developing the oyster mushroom cultivation.

In order to realize his dream, Taufik Hidayat left his professional career at PT Astra Internasional Tbk, to return to his village and started the development of oyster mushroom cultivation.



The business had encountered enormous obstacles, when the flood hit the processing area, nursery, and baglog (a growing medium for oyster mushroom) medium. Taufik Hidayat did not lose his hope. With his persistence and a substitute capital loan from SEGWWL, the mushroom cultivation business manages to grow and develop. The nursery area and baglog medium are moved to a place that is safe from flooding. Now, the business has produced satisfying

results and it is able to generate decent income for Taufik Hidayat's family and the community.



The development of oyster mushroom continued to develop in 2018. The production capacity of baglog, as the growing medium for oyster mushroom, is increased from 25,000 pieces/year to 50,000 pieces/year by the construction of a new and representative production house. Furthermore, the outcome of the baglog waste recycle is now processed into eco-friendly fuel, which is used for eco-friendly stoves with wood pellet as the fuel. This modification has made the sterilization time of baglog medium shorter, which is 2.5 hours/900 baglog from 4-5 hours.



The change of autoclave fuel, which previously used 30 liters of used oil in one process, to 50 kg wood pellet in once process, contributes to the decrease in carbon dioxide (CO<sub>2</sub>) emission by 79,08458 kg.

Besides providing benefits for the environment, the oyster mushroom cultivation by Villa Mushroom Agrifarm also makes notable contribution for the mentored farmers, with the total of 13 farmers up to 2018. Currently, they receive additional net income of Rp2,500,000/month, or equal to 93.4% of the 2018 regent minimum wage in Bandung regent.

## DEVELOPMENT OF INFRASTRUCTURE IN RURAL AREAS [GRI 203-1]

The optimization of development of rural economic potentials based on agricultural, plantation, and tourism, will be obstructed if the basic infrastructure, such as roads, trading centers, and local information centers, are not sufficiently available. Therefore, SEGWWL is fully committed to cooperate with Local Government, to support infrastructure development program in villages around Pangalengan.

The program objectives are:

1. To improve the infrastructure quality of public facilities and social facilities in 13 villages in Pangalengan District.
2. To strive for distributed road access throughout all areas in Pangalengan Subdistrict.

The infrastructure development program started to be implemented in 2009. At the beginning of its implementation, we more focused on the revamp and renovation of social facilities that were destroyed during the earthquake. Starting from 2013 up to now, we have initiated Self-Management Collaboration program with 13 local governments in the Pangalengan District to perform renovation and/or rehabilitation of public facilities and social facilities. The selection and implementation of renovation and rehabilitation projects is determined through the mechanism of Planning and Development Forum (Musrenbang) and Planning and Development Forum at Rural Area (Musrenbangdes).

1. In 2015, a landslide disaster struck the area of Pangalengan. The landslide location was Cibitung Kampong, Margamukti Village. The disaster took place when rain fell incessantly for days over the slopes of Mount Bedil, which the soil structure had already been frail. The frail land area that was no longer covered by shady trees glided down for 1.2 km and hit the residence area of the villagers, after breaking one of the company's geothermal pipes. The volume of the land debris was 300 m<sup>2</sup> with the depth of 4m.

The Cibitung landslides caused the death of nine people, seven severely injured, and five lightly injured. Ten houses were badly damaged and one with minor damage. Furthermore, SEGWWL's geothermal pipes of 250 in length was damaged. A total of 134 villagers of Cibitung RW 15 took refuge at Margamukti Village Hall.

In response to this disaster, SEGWWL showed its commitment by building 8 houses (worth Rp500,000,000) for the victims who lost their homes. The construction of the relocated houses was carried out based on RAB and design from the Bureau of Public Works and People's Housing (formerly Department of Housing, Land Planning, and Sanitation) of the Regency of Bandung. Started in 2016, the program was completed in December 2017.

2. In 2017, one of the featured programs in infrastructure development was the installation of electricity connection at 102 houses of underprivileged families in Desa Margamukti. This installation would effectively support the amelioration of social, economic, and cultural productivity aspects, which would have impact on the higher prosperity of communities.

Besides the infrastructure that supports the social activities in rural areas around the Ring 1 and Ring 2, the other focuses were the development of posyandu (maternal center) and improvement of inter village roads.

3. For 2018, the electrification program was continued and targeted 102 houses of underprivileged families at around the area of Ring 1, particularly at Desa Margamukti. The other infrastructure development programs performed are development of posyandu, development and improvement of road quality, development of cliff protective wall and river or hill cliffs with gabion.



The following is the realization of village infrastructure investment in 2018.

No	Activities	Budget (Rp)	Implementation
1	Margamukti : Development of posyandu in RW 21 and RW 01 with the area of 5m x 7m and development of cliff protective wall in RW 26 with the area of 5m x 7m	195,000,000	100%
2	Pulosari : Pipelines for clean lines in Village I & Village II with the length of 750 m	84,500,000	100%
3	Sukamanah : Development of hotmix for the village roads in RW 22 to RW 03 with the length of 300 m	130,000,000	100%
4	Wanasuka : Development of gabion in RW 01 45 m <sup>3</sup> , development of MCK (public bathing, washing, and toilet facility) in RW 02 10 m <sup>2</sup> & RW 06 12 m <sup>2</sup> , renovation of public toilets in RW 01, 02 10 m <sup>2</sup> , development of drainage in RW 07 20 m <sup>3</sup> & in RW 08 30 m <sup>3</sup>	130,000,000	100%
5	Margamekar : Development of pavement in RW 11, 12 with the length of 600 m	84,500,000	100%
6	Sukaluyu : Development of footpath in RW 01 100 m & RW 02 with the length of 150 m, development of bridges in RW 01 with the length of 10 m	84,500,000	100%
7	Warnasari : Development of cliff protective wall in RW 03 of 60 m <sup>3</sup> & RW 05 of 36 m <sup>3</sup> , development of rebate concrete in RW 15 57 m <sup>3</sup>	84,500,000	100%
8	Margaluyu : Development of rebate concrete in RW 04 with the length of 600 m, development of MCK in RW 06 with the area of 5m x 2m	84,500,000	100%
9	Pangalengan : Development of posyandu in RW 06 with the area of 4m x 6m & RW 19 with the area of 4m x 6m	130,000,000	100%
10	Banjarsari : Development of road penetration in RW 08, 09 with the length of 2000 m	130,000,000	100%
11	Margamulya : Development of posyandu in RW 03 and RW 11 4m x 6m	130,000,000	100%
12	Tribaktimulya : Development of road penetration in RW 04 with the length of 600 m	84,500,000	100%
13	Lamajang : Development of cliff protective wall in RW 11 with the length of 180 m <sup>3</sup>	84,500,000	100%
14	Free electrification program to 102 houses of underprivileged families in Margamukti Village	93,075,000	100%
<b>Total Realization of Infrastructure Budget</b>		<b>1,529,575,000</b>	

## PRESERVING THE ENVIRONMENT & DEVELOPING TOURISM POTENTIALS

One of the factors that caused damage to the forest around SEGWWL's operational area was conflict of interest, between the public's interest in doing plantation or farming to fulfill their daily needs and the necessity of preserving the forest. At the end, the fulfillment of people's life needs is always prioritized, which then leads to conversion of natural forests into plantation area that then cause damage to the land condition. Several areas with high slope was converted into a farming land for annual plant, which was not only prone to landslides, but also caused groundwater reserves to run low.

As a result, several water springs in the concession area were at risk and suffer from the decrease in water discharge. Some water springs have even disappeared. Flood and landslide disasters which then hit the area stirred up the public to join hands with the company and related stakeholders to return the environment habitat, as well as to manage it as more preserved income sources.

Therefore, SEGWWL then launched the program of "Cinta Bakti Lestari", a collaboration program between the company and Pecinta Alam Penelusur Belantara (PAPB) Tapak Tiara in returning the environment habitat, as well as obtaining economic benefit. The purpose of this program is to restore

and conserve buffer zone to protect the water springs area and critical land. In 2018, the restoration is focused on area of Leuweung Citere lake and the water springs in WWA. The long-term target of this program is the restoration of 17 water springs throughout the area. This is done by planting

7,000 vetiver plants and 1,000 crop plant in the areas around the water springs. The temporary result shows that the water springs have produced water again with increasing level of water discharge.

## 'Cinta Bakti Lestari' Program – The restoration and preservation of Water Springs Environment



### Mutually creating benefits

- Water supply with the new sources of water
- Raise awareness to the governance of environment and water sources by restoring and protecting water springs from potential disturbance and environmental damage, including drought, landslide, illegal farming, illegal logging, and flood.
- Effort to reduce carbon emission
- New alternative for economic sources

Cinta Bakti Lestari Program is a continuity and replication of environment governance and public empowerment program, which was previously done at Situ Cioray, Mount Malabar, in cooperation with Ambeu Preanger Community. As a result, the water spring in Mount Malabar becomes better and the area becomes a field camp for the tourists. In 2017-2018, SEGWWL performed the same activity, but in different community, which was the restoration and conservation of the water spring in Leuweung Citere, Desa Margamukti. This activity is known as Cinta Bakti Lestari.

This program, called Cinta Bakti Lestari, is held at Leuweung Citere and is a collaboration program between SEGWWL and Pecinta Alam Penelusur Belantara Tapak Tiara (PAPB Tapak Tiara) to support and fulfill two Global Sustainable Development Goals (SDGs) no 6 & 17 on Clean Water & Sanitation and Partnership through capacity and awareness increase of the community on new springs. It is expected that the restoration of Leuweung Citere spring is successful to make it a new source of raw water that can also prevent illegal logging and agriculture.

Accumulatively, 172.8 m<sup>3</sup> of water every day or equal to 5,184 m<sup>3</sup>/month flows from Leuweung Citere spring, which is estimated to be able to meet the needs of 2,880 people in 3 (three) villages, namely Margamukti, Pangalengan and Margamulya.



The clean water potential can be utilized by the community around Situ Citere. Mathematically calculated, people can save to Rp. 321,594,000/year if they obtain clean water from Situ Citere, with an assumption that they do not bear any costs when consuming clean water from Situ Citere. This calculation is based on Situ Citere's ability to serve the community, which is 494 families/month.

Restoration and vegetation activities at Leuweung Citere with the area of 139 m<sup>2</sup> have been carried out by SEGWWL and PAPB Tapak Tiara since August 2017 up to now.

## Testimonial Head of Desa Margamukti– Mr. Yayat Endang

We as the officials at Desa Margamukti, which is included in the Ring 1 area of the Geothermal Power Plant of SEGWWL would like to thank for the Company's consistency in supporting the development programs of Desa Margamukti, through the implementation of Corporate Social Responsibility (CSR) programs.

We are greatly helped by the support of CSR programs that are jointly planned, realized, and evaluated by SEGWWL and us as the recipient of the benefits. We appreciate the concept of the CSR programs implemented by SEGWWL, which always involves the village officials and the elders from the officials at Community Association level at Desa Margamukti since the planning, implementation, and evaluation stages. Thus, we feel as a part and owner of the programs implemented. There are various CSR programs, and it covers all of the basic needs that we expect, starting from basic infrastructure availability, equipment for the village government, medical equipment, such as posyandu, and environmental quality improvement programs.

Moreover, we also receive tremendous help as SEGWWL also provides support for the growth of economic potentials at Desa Margamulya, both directly and indirectly. Since the beginning of 2000, SEGWWL has provided assistance and guidance for the development of Nurkayana UMKM Cooperative as a place to improve the entrepreneurship of micro- and medium- businesses at Pangalengan District. In the last several years, SEGWWL has also fully supported the development of ecotourism potentials, through the coffee community and nature lover community, as well as the agribusiness that we are currently expanding. The supports complete the realization of Provincial/ Central Government programs through the mechanism of village fund distribution, which is prioritized for the basic infrastructure development.

We hope that SEGWWL can continue to support the development of the village and increase its contribution for the development so that Desa Margamukti can grow optimally. It is hoped that the implementation of tourism development program, that is in line with the growth of eco-friendly agriculture/plantation-based economy, can create optimal positive impact, namely increased public welfare and environmental quality.

5

# Supporting Renewable Energy Development and National Economic Development



THE COMPANY IS FULLY COMMITTED TO SUPPORTING THE DEVELOPMENT OF RENEWABLE ENERGY SOURCES POTENTIAL BY OPTIMIZING POWER GENERATION FROM MANAGED AREAS IN ORDER TO SUPPORT THE ACCELERATION OF NATIONAL ECONOMIC DEVELOPMENT THROUGH EFFICIENT SUPPLY OF ELECTRICITY FROM GEOTHERMAL POWER PLANT OPERATIONS WHILE TAKING INTO ACCOUNT ECONOMIC GROWTH AND LOCAL COMMUNITY DEVELOPMENT.

Pursuant to PLN RUPTL 2018-2027, the Government, through PT PLN, has planned to achieve 100% national electrification ratio before 2025. In addition, the Government is also targeting an increase in the utilization of new and renewable energy resources to 23% by the end of 2025.

To that end and since 2015, the Government has set a target to construct power plants, complete with a transmission and distribution network of up to 35,000 MW by the end of 2026, in accordance with the latest electricity consumption growth. Included in the 35,000 MW power plant program is a power generation based on new and renewable energy source (NRE). There are several types of power sources from EBT that will be developed seriously according to the level of its economic value, namely: geothermal, hydro, mini-micro hydro, bioenergy, solar and wind.

## SUPPORTING THE DEVELOPMENT OF NRE-BASED GENERATOR

In general, the development of power plants aims to support the acceleration of national economic growth, while the purpose of NRE power generation development

is to optimize existing natural resources. From the various new energy sources, geothermal, hydro and bioenergy are the three types of energy sources that have the most potential to be developed massively to contribute in generating 35,000 MW of electricity as targeted. Based on studies that have been carried out and data from PLN as stated in RUPTL 2018-2027, the electrical power potential from the development of geothermal power plants (PLTP) in Indonesia reaches 29,544 MW, while the installed capacity that has been developed is 1,438.5 MW or only 4.9% of all available potential.

In connection with the geothermal power plant development program, Star Energy Geothermal Wayang Windu Ltd (SEGWWL) has given significant contribution through commercial operations of its power generation units in 2000. In 2018, the Company was able to supply electricity to PT PLN (Persero) network at approximately 1,896 GWh, slightly decreased from 1,910 GWh in the previous year. The Company has set a target to increase electricity supply in the coming years from both Wayang Windu geothermal fields and other managed geothermal fields to be developed.

## GEOTHERMAL FIELD OPTIMIZATION

SEGWWL has determined and is currently carrying out two main programs to optimize the potential of managed geothermal fields, i.e. optimizing the performance of power plant units that are already operating and building new PLTP units. To maintain the performance of operating power plants units, we continue to maintain production capacity through maintenance of wells and generating units as well as implementation of Wayang Windu Integrated Management Systems. The general objectives of the application of these programs are:

- To improve the efficiency of the operational conditions of the main equipment and maintain the protection system to ensure the readiness and capability of the power plant to always deliver optimal output.
- To ensure synergy, integration, and reliability of power plants.
- To ensure an increase in power plant performance under normal operating conditions.

In operating and developing PLTP, the Company is committed to complying with all applicable provisions in the development and implementation of electricity supply and seeks to improve its ability to manage power plants effectively and efficiently.

The company believes that by optimizing the development of electricity potential from geothermal fields, SEGWWL has helped support the acceleration of national development through electricity supply from the currently managed PLTP. The company accordingly has contributed to provide basic infrastructure, i.e. electricity, which is one of the main factors that can support the acceleration of a country's economic development.

## CONTRIBUTION TO NATIONAL DEVELOPMENT

SEGWWL contributes to national development through two main channels. First, direct contribution to the state through fulfillment of various tax obligations, payment of import duties and retribution from land/use of geothermal energy from use of geothermal. We fulfill all Government provisions in the field of taxation by paying sales tax, income tax and other relevant taxes as a form of direct contribution. As a result of

our compliance with all tax regulations and provisions, during the reporting year, there was no violation made and fines to be paid.

Second, through the fulfillment of optimal and well-maintained electricity supply in accordance with the capacities mentioned previously, SEGWWL also supports the Government of Indonesia's efforts to accelerate the growth of national economy, given that the electricity supply has a positive impact on economic growth. The company also provides material contribution to the country through the construction of a number of public facilities and infrastructure (see the description of "Building and Ensuring Community Welfare"), including:

- Development of rural road infrastructure.
- Development of local and sub-district government infrastructure.
- Construction of places of worship.
- Development of educational facilities from kindergarten, elementary school, elementary, junior high and high school levels.
- Development of healthcare facilities/posyandu, and so on.

## SUPPORTING REGIONAL ECONOMIC GROWTH [GRI 203-2]

SEGWWL supports regional economic growth by providing direct and indirect contributions to the government through payment of land and building tax of our offices and supporting facilities, as well as operational vehicle taxes that will add to the regional-own source revenue (PAD), and construction of public facilities and infrastructure. The Company also supports regional economic growth by using products and services from local suppliers, besides absorbing local people residing around the Company's operational areas.

To illustrate this, the number of local residents who became permanent workers at the Company in the reporting year reached 28 people or 13% of the total 215 permanent workers in 2018. Some of these local workers have been able to develop themselves to reach higher career as staff, supervisors, engineers and even up to department head (superintendent). The number of local workers does not

include local workers hired through contract scheme or non-permanent workers, whether they are tasked with supporting administrative activities or other field activities, such as day

labor to support the ongoing geothermal well maintenance program.



## Testimonial the Head of Desa Pangalengan – Ibu Haji Tati

*Allhamdulillah*, we receive so much help from the existence of a social responsibility (CSR) program for the development of villages in Pangalengan Sub-District. SEGWWL's CSR programs for Desa Pangalengan have been implemented for more than 10 years. Thanks to the implementation of these programs, the basic infrastructure of Desa Pangalengan continues to improve, especially in the fields of health and education. In the past few years, the SEGWWL CSR program support was focused more on healthcare development in Desa Pangalengan, i.e. building a posyandu along with all healthcare-related equipment and programs needed by the local community. Currently, almost all RWs in Desa Pangalengan have been equipped with Posyandu facilities.

Because of the support from the program, the record of malnutrition, stunting and infectious diseases in our villages continues to decline. And due to the support of educational programs, including through Rumah Pintar Program, literacy rates have also improved, and many

community members in our village now have a better chance in education through their participation in the Kejar Paket A, B and C programs in Rumah Pintar, after previously dropped out of school.

We are currently developing a semi-modern market where SEGWWL currently supports an integrated waste management program carried out jointly with the District Government. We hope that SEGWWL can also further support smooth development of the market by continuously providing entrepreneurship training programs for micro entrepreneurs and consistently supporting the tourism potential development program, given that the market being built will also function as a tourist market.

Once again, we greatly thank SEGWWL for the implementation of its CSR programs. We hope that SEGWWL can continue to increase its support, so that more people in our village will become direct beneficiaries of these programs in the future.



## RELATIONSHIP WITH SUPPLIERS, CONTRACTORS, AND PARTNERS

We have implemented the Contractor Safety and Health Environmental Management System (CSMS) in our screening process and when assessing major contractors' performance. The System enables us to build the competence of both our contractors' manpower and management such that it aligns with our occupational health, safety, and environment standards. **[GRI 308-1]**

Following the criteria outlined in the CSMS, we require contractors to meet the rights of their manpower. The CSMS also benchmarks major contractors' performance against workmanship standards. As part of our commitment to uphold human rights, we have in place a whistleblowing system to ensure that the procurement of goods and services is conducted in a transparent and accountable manner.

We also routinely conduct training and counseling to contractors, especially to local contractors, in order to increase the compliance of each contractor with SHE system so that they can meet the requirements set in government regulations (PP 50 of 2012). It is expected that the improving SHE system applied by the contractors will greatly help them fulfill CSMS assessment criteria of SEGWWL.

The CSMS consists of six (6) phases: risk assessment, prequalification, selection, pre-job activity, job management, and final evaluation. SEGWWL insists on our partners meeting our standards in quality of goods, credibility, accountability, accuracy of goods and services, and fair prices. In addition, the Company requires our partners to meet occupational health and safety standards. We routinely evaluate our partners during procurement, execution, and conclusion of a contract as benchmark for future selection processes. We also take into account the occurrence of accident with certain severity level in our final assessment process. In the reporting year, all, 100%, of our major partners went through the screening process. **[GRI 414-1]**

## PRODUCT STEWARDSHIP AND CONSUMER PROTECTION

SEGWWL's product is 150 kilovolts (KV) of electric power that we sell to our sole customer, PLN, in accordance with prevailing legislation. The product is not packaged in any form and does not bear any production code. Given that we have one customer stated by prevailing legislation, it eliminates the need for sales, marketing, or other outreach to sell the product.

The electricity we generate is transmitted to the Java-Madura-Bali interconnection network managed by PLN. Besides, Wayang Windu's main substation is also equipped with a 150/70 KV of (Inter Bus Transformer) IBT where the network is connected to several small hydropower plants supplying electricity around Pangalengan where SEGWWL is located, which is expected to further increase the reliability of electricity supply and indirectly drive the local economy. Our sales agreement with PLN underlines the following general provisions:

- The sale of electricity is regulated by a fixed-term sales agreement.
- The price of electricity per kWh refers to the sales agreement with PLN upon approval by the Ministry of Energy and Mineral Resources.
- The amount of power sold in each period is determined by operational plans prepared in accordance with interconnection demands and our maximum generation capacity.
- PLN is committed to receiving at least 95% of our maximum generation capacity.

We maintain intensive communications with PLN to ensure that we supply the correct amount of power and voltage. Discussions with PLN include topics such as operation plans and routine maintenance of steam production installations and generators. The production procedure and electricity sales administration are each conducted in such a sound manner that we received zero complaints during the reporting period. Furthermore, there were zero complaints and zero financial sanctions caused by breaches of the agreement on electricity supply and product usage. **[GRI 417-3]**

## PRODUCT SAFETY

Electric lines with a voltage of 150 KV are considered as high voltage which can endanger health and life safety if people get too close to it or even touch it. To prevent this, SEGWWL complements the electricity channel and connection system from the generator to the transmission network owned by PLN with reliable security and insulators so that it does not endanger humans and the surrounding environment. The company also strictly secures the area around the production

well, despite its remote and far location from the activities of the surrounding community. Only authorized workers are allowed to enter and work in the area around the production well. In carrying out activities in the production well area, the employees must wear clothes according to the specified OHS standard.

Meanwhile, the Company uses special heat insulations in the piping network that channels steam from production wells to minimize harm for people and animals. We ensure that all

## Monitoring Potential of Ground Movements

One of the main risks from the management and operation of geothermal power plants which are generally located in mountainous areas is ground movement, both in the form of landslides as a result of damage to vegetation areas and landslides due to earthquakes originating from volcanic activity from nearby mountains. Vegetation damage is mainly caused by conflicts of interest with surrounding communities, which is when some forest areas are converted into plantation and agricultural zones without considering the carrying capacity and landscape.

A few years ago, the risk of these disturbed natural conditions occurred. Following heavy rain that lasted several days, there was a landslide in a mountainous land area that had been converted. One of the steam pipelines was interrupted and the Company had to cease the operational activities of the generator for a certain period. The company then had to repair the installation of geothermal steam pipelines and reconstructed all the equipment and buildings around the installation.

The company carries out a program to reconstruct the environmental conditions and realizes Geohazard Potential Monitoring Program in all potential areas of similar risks both in managed areas and areas near the installation of geothermal steam pipelines, production wells, and other supporting facilities areas. It is expected that mitigation measures can be done accurately and efficiently. The following is the description of the program.

### PURPOSES

Monitoring of geohazard potential is carried out periodically in the area around the Wayang Windu Geothermal Power Plant equipment installation. This monitoring aims to provide early warning so that each level of geohazard risk can be addressed with appropriate actions and coordination to minimize the risk as low as possible. The monitoring equipment used includes nuki-ita, extensometer, piezometer, rain gauge, and inclinometer. The equipment is widely provided in certain locations that have geohazard risk. In addition to the equipment, monitoring of ground movement potential is also carried out through observation of relative movement between the pipe and the pipe holder (support). Visual monitoring is also carried out to map certain conditions that could trigger geohazard risk around the generating facilities, such as soil cracks, changes in springs, traces of soil movement, and so on.

#### 1. Monitoring Methods

This ground movement monitoring equipment is divided into two parts. First, equipment installed to monitor the ground movement at the surface, which is nuki-ita and extensometer. Second, the equipment to monitor the movement at the subsurface soil, namely inclinometer. Nuki-ita is used in areas with steep slopes and not for wide coverage, while extensometers are used in areas with steep slopes and wider coverage. Other monitoring equipment that is not directly related to soil movement is a rain

equipment used in business operations is environmentally friendly. We conduct routine evaluations and inspections on the security of our production facilities, production wells, and electrical interconnection to PLN's substation. The routine evaluations and inspections are intended to ensure that all policies and security procedures do not harm the health and safety of workers, public, other living beings, and the environment. As a result, during the reporting year, there were no policy violations in regard to these stakeholders. **[GRI 416-2]**

Under our current procedures and preventive measures, the Company has received zero reports, grievances, or complaints that could indicate violations to health, safety, and environment in supplying the product. Thus, the Company did not receive either monetary or non-monetary sanctions due to non-compliance with laws and regulations in social and economic field during the reporting year. **[GRI 419-1]**

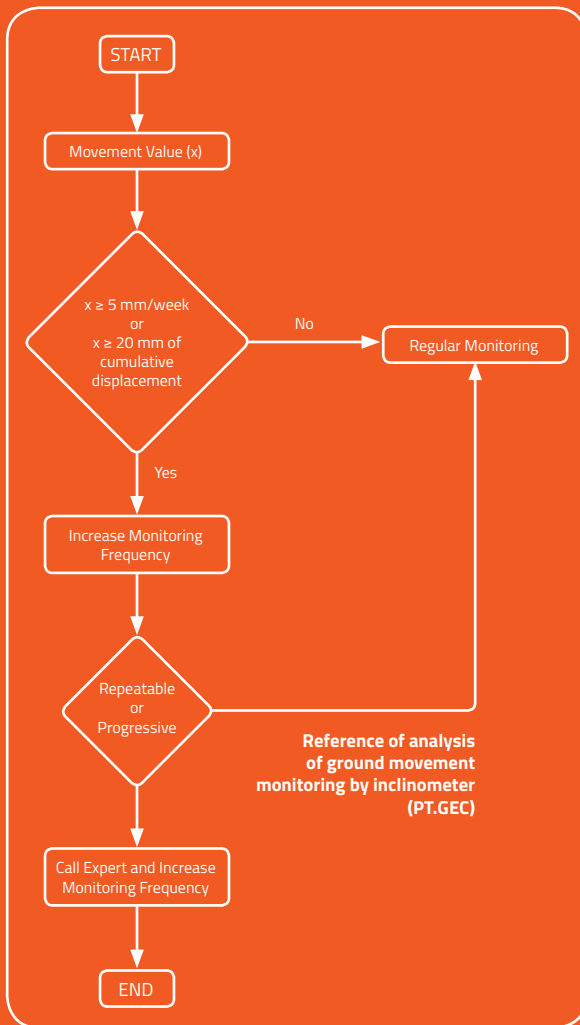
gauge and a water level meter (piezometer). Rain gauge and piezometer are used to monitor the triggering factors of soil movement, namely rainfall and ground water level.

Photographs of ground movement equipment monitoring used in Wayang Windu are as follows:

To respond to ground movement monitored from extensometer and nuki-ita, we act by referring to recommendations from Nippon Koei Co. Ltd as shown in the table below, while ground movement monitored from inclinometer will be addressed by referring to recommendations from PT. GEC in accordance with image analysis of ground movement monitoring with an inclinometer. With these recommendations, SEGWWL can take effective follow-up in accordance with the results of geohazard monitoring.



Warning Level	Level 1	Level 2	Level 3	Level 4
Extensometer	>10 mm/30 days	5-50 mm/5 days	10-100 mm/1 day or >2 mm/1 day	>100 mm/1 day or >4 mm/1 hour
Wooden bar (Nuki-Ita)				
Action	<ul style="list-style-type: none"> <li>Site Inspection</li> <li>Increase frequently of monitoring</li> </ul>	Call a landslide specialist	<ul style="list-style-type: none"> <li>Preliminary alert</li> <li>Emergency measure</li> </ul>	<ul style="list-style-type: none"> <li>Danger Level</li> <li>Evacuation</li> </ul>



## 2. Monitoring location

### A. Monitoring Location using Nuki-Ita, Extensometer, Inclinometer

Geohazard monitoring locations are spread in 10 locations in the project site and its surrounding areas. The location and monitoring equipment used for each point are mentioned in table 2, while examples of the distribution of monitoring equipment in a location are shown in figure-3.

Location & Distribution of Monitoring Equipment

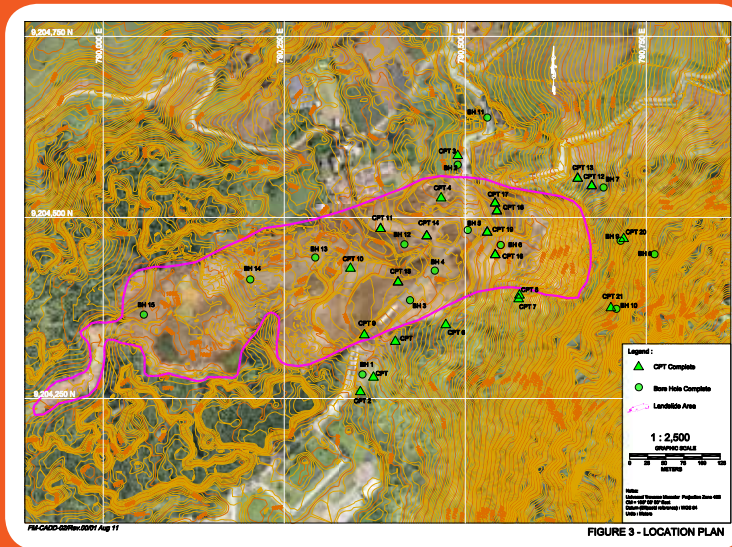
Location	Monitoring Equipment
MBA	N1, N2, N3, N4, Pipe gap ( Subsidence) dan Inclinometer
MBD Bridge	Inclinometer Extensometer-1 Pipe gap (PG-40)
Landslide-1	Inclinometer N1, N2, N3, N4 dan N5 Extensometer-1, Extensometer-2, Extensometer-3, Extensometer-4 dan Piezometer
WWQ- Wellpad	N1
WWQ-Corridor	Inclinometer
WWS	Extensometer-1
WWA-Corridor	Extensometer-1, Extensometer-2, Extensometer-3, Extensometer-4, Extensometer-5, Extensometer-6, Inclinometer, Piezometer
WWA-Wellpad	N1 dan N2
WWD	Inclinometer
Power Station Entrance	Inclinometer dan Piezometer

Example of Location and Distribution of Extensometer and Nuki-ita Monitoring Equipment at Landslide-1



### B. Groundwater & Rainfall Monitoring Locations

Monitoring location of groundwater level and rainfall can be seen in the groundwater measurement location picture. Based on monitoring results between January-June 2018, rainfall intensity was low at 1.36 mm/day. Decreasing ground water level is directly related to rainfall.



Location of groundwater measurements at Landslide-1

### C. Monitoring Points of Relative Motion of Pipes and Pipe Holders

In addition to the installation of several monitoring tools to identify ground movement, movement monitoring is also carried out along pipelines installation area by observing relative motion of the pipes and pipe holders on a regular basis.



## 3. Monitoring Results

Based on monitoring results of ground movement potential in Wayang Windu Geothermal Power Plant area, it can be concluded that during monitoring period, there was no ground movement found due to slope instability. Therefore, it is safe to say that geohazard risk is low. Details of the monitoring results at each monitoring location are explained in the following table.

### Geohazard Monitoring Results

Location	Monitoring Equipment	Condition
MBA	N1, N2, N3, N4, Pipe gap ( Subsidence) dan Inclinometer	Stable
MBD Bridge	Inclinometer, Extensometer-1 dan Pipe gap (PG-40)	Stable
Landslide-1	Inclinometer, N1, N2, N3, N4, N5 Extensometer-1, Extensometer-2, Extensometer-3, Extensometer-4, Piezometer	Stable
WWQ- Wellpad	N1	Stable
WWQ-Corridor	Inclinometer	Stable
WWS	Extensometer-1	Stable
WWA-Corridor	Extensometer-1, Extensometer-2, Extensometer-3, Extensometer-4, Extensometer-5, Extensometer-6, Inclinometer, Piezometer	Stable
WWA-Wellpad	N1 dan N2	Stable
WWD	Inclinometer	Stable
Power Station Entrance	Inclinometer dan Piezometer	Stable

6

# Improving Occupational Health and Safety

THE COMPANY IS FULLY COMMITTED TO ENHANCING OCCUPATIONAL HEALTH AND SAFETY PERFORMANCE THROUGH THE IMPLEMENTATION OF ACCREDITED OHS OPERATING STANDARD WHILE GROWING OHS-RISK AWARENESS CULTURE TO ENSURE THE ACHIEVEMENT OF ZERO-ACCIDENT TARGET AND CREATE SAFE, HEALTHY, AND COMFORTABLE WORKING CONDITIONS THAT ARE FREE FROM OCCUPATIONAL ACCIDENTS.

Geothermal power is considered as a renewable energy source that has enormous potential in Indonesia. The operations of Geothermal Power Plant (PLTP) is greatly cost-efficient in terms of working capital, considering that there is no need for routine fuel spending as required in the operation of a Coal-Fired Power Plant (PLTU). This is because steam as a source that motors turbine is already available in nature, i.e. in the earth's reservoirs, especially in areas close to volcanic areas. Carbon dioxide emissions from geothermal power plants are also very low, less than 100 kg CO<sub>2</sub> per megawatt-hour (MWh), making them one of revenue sources through a carbon trade mechanism facilitated by the UNFCCC.

However, efforts to utilize geothermal energy are still challenged by high-cost investment of energy development, as it requires specific and advanced technology as well as large amount of fund to support intensive exploration drilling activities aimed at discovering electricity potential. In addition, in every steam-producing well, there are always gases that get carried and may be released along with geothermal steam that can cause hazard to work safety, which must also be overcome and treated.

As one of businesses that requires large amount of capital for development needs, the operations of geothermal power plants (PLTP) shall be properly managed to

optimally minimize OHS risk that mainly comes from the negligence of operators in the field. Such huge capital fund is needed because the development of geothermal power plants requires specific high-tech applications and large initial investment, yet accompanied by high risk of failure. Specific advanced technology is needed to analyze, calculate, and carry out drilling of production wells from reservoirs of steam or brine located far below the ground, to be further channeled through pipes to power generators.

The accident-prone points in the management of geothermal power plants source from several activities, from the drilling of geothermal wells, steam pipelines, to power generation facilities in the Power House area. Occupational accident risk is so high that the security, control, and monitoring across all vital facilities have been our number one priority to prevent fatal accidents that can hinder operations.

Therefore, since the initial stage of the development and operation of PLTP facility, as well as the distribution of generated power to the transmission network owned by PT PLN (Persero), SEGWWL has committed to implementing high safety and health standards in the implementation of operational procedures. We want to achieve zero accident target in each operational period, i.e. no loss of workdays due to accidents and minimum loss of workdays due to illness.

## COMMITMENT, POLICY AND OPERATING STANDARDS

[GRI 103-1, GRI 103-2, GRI 103-3]

As a form of commitment to improve the quality of OHS aspects, the Company emphasizes the implementation of quality OHS policy in the points of "Wayang Windu Field Policy" statement which confirms that Star Energy Geothermal (Wayang Windu) Limited, is determined to be committed to:

- Preventing accidents, illness, damage to property, work place and to conserving the environment, including prevention of pollution by avoiding certain losses to employees, contractors, communities and the environment to ensure sustainable business.
- Applying continuous improvement in the aspects of Occupational Safety, Health, Environment (SHE) and Quality, energy and asset performance in the SEGWWL organization.
- Complying with SHE and Quality, laws and regulations, as well as other rules, including energy use, consumption, efficiency and asset management issues.
- Satisfying the customer with our product and service and maintaining respectful communication.
- Taking responsibility for the impacts of business activities related to SHE and Quality, energy and asset management, including social responsibility and likewise, encouraging other parties including our business partners, suppliers or vendors and contractors.
- Managing SHE and Quality aspects, energy and asset issues as the basis of day-to-day business activities.
- Periodically evaluating Wayang Windu's Integrated Management System to ensure its effectiveness and to ensure that this policy remains in line with the program objectives and goals and with the business.

The Company will:

- Provide comprehensible information and sufficient explanation related to SHE issues to stakeholders, representing Wayang Windu's Integrated Management accurately with verifiable performance.
- Ensure that this policy is communicated to and understood by our employees and the persons working under our control and/or on behalf of the Company. This policy is also applicable to related parties.

In its implementation, the Company implements occupational safety and health policy through the accidental prevention programs in addition to providing occupational health guarantee. We believe that this policy, our accidental prevention programs, and occupational health guarantee are in line with the third point of Sustainable Development goals (SDGs) scheme, i.e. "Good Health and Well-being - to Ensure healthy lives and promote wellbeing for all at all ages."

The Company integrates the Occupational Safety and Health Management System (OSHMS) in accordance with certified operating standards OHSAS 18001:2007 and OSHMS (Certification by the Ministry of Manpower, based on PP 50 year 2012) as well as the environmental management system certification in accordance with ISO 14001: 2015, and the ISO 9001:2008 quality management system as an integrated system. [GRI 102-12]

While consistently applying all SOPs according to the certification standards, the Company also periodically conducts audits 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, and no major issue in the auditing process was found. The latest certification process for occupational safety and health standard of OHSAS 18001:2007 was conducted by PT Lloyd's Register Indonesia on July 18 – 20, 2018 for audit surveillance activity, while renewal of environmental protection standard certification (ISO 14001: 2015) was carried out on December 5-7, 2018, as an extension of the certificate until January 28, 2021.



## OCCUPATIONAL SAFETY COMMITTEE

The Company has established a Safety, Health, and Environment Committee (SHE Committee) to coordinate the SHE-related activities and programs which includes all employees. 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. Approximately 16% of the Contractual Bargaining Agreement is related to occupational health and safety topics. The organizational structure of SHE Committee includes the Executive Management, Operational Senior Manager, and eight employee representatives (5.3% of the total permanent employees). [GRI 403-1, GRI 403-4]

The duties of the SHE Committee are as follows:

- To discuss every problem in occupational safety, health, and environment (SHE), covering the activities of protecting, preventing, and resolving the possibility of occupational accidents or illness;
- 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,

To conduct evaluations, the SHE Committee carries out regular meetings.

### Total Employee Representatives in The SHE Committee Structure

Job Description	Unit	Year				
		2014	2015	2016	2017	2018
Occupational Safety	Person	3	3	3	3	3
Occupational Health	Person	3	3	3	3	3
Environmental Protection	Person	2	2	2	2	2
Total	Person	8	8	8	8	8

## SHE PROGRAMS IN 2018

Several strategic SHE programs were realized in 2018 in accordance with the evaluation results from SHE Committee, which include:

- Conducting national SHE Month campaign through several SHE competitions and campaigns of occupational safety at work.
- Training for work permits for employees and contractor employees.
- Conducting occupational safety workshop for employees to increase contract holder's capability in the prevention of incidents.
- Conducting PROPER Evaluation Workshop to evaluate and take lessons from previous year's performance and to plan for the incoming year.
- Blood donor of Indonesian Red Cross (PMI) Bandung Regency for employees and contractors.
- Discussion on the draft of Minister of Energy and Mineral Resources Decree on Safety and Health in geothermal energy facilitated by The Directorate General of New Renewable Energy and Energy Conservation (Dirjen EBTKE).
- Dissemination of ADITAMA award assessment by EBTKE.
- Training and test of Wayang Windu Driver's license for employees and contractors.
- Technical workshop for PROPER 2018.

- Fitness test (handgrip, flexibility, rockport) and aerobic exercise by BKOM Bandung for employees and contractors.
- Leadership Involvement Program in SHE observation and inspection activities in the Wayang Windu field.
- SHE technical guidance by EBTKE to SEGWWL employees and contractors.
- Emergency response training with scenario of landslide occurrence and demonstration by residents around the operational area.
- Periodical employee health examination for all employees based on occupational risk exposure.
- Audit and certifications for ISO 9001, ISO 14001, ISO/IEC17025 and OHSAS 18001.

## SHE PERFORMANCE STATISTICS IN 2018 [GRI 403-2]

Despite the Company's strict work procedure that upholds employee safety and the environment, the broad green field of the Company's operational area sometimes makes workers in the field become less cautious, thus causing work accidents.

However, due to the Company's consistency in instilling a culture of work safety and being aware of OHS risk, workplace accident trend declined in the last three years. The number of workplace incidents during the reporting year 2018 is as follows.

### Frequency of Work Accidents in 2014-2018

Occupational Accident Type	Year				
	2014	2015	2016	2017	2018
Minor	4	9	10	4	2
Moderate	0	0	0	0	1
Major	0	0	0	0	0
Fatal	0	0	0	0	0
Total	4	9	10	4	3

In 2018, the intensity of field activities was not as high as that of 2017; the most critical project in this period was the preparation for mobilization and drilling of make up well at Q3, followed by several other jobs. Given the intensity of field operations for the implementation of drilling of make up wells in several well pads to increase the amount of steam was decreasing, the number of workplace accidents this year was lower than that of 2017, and the number of lost man-hours decreased within the minimum range. This good achievement indicates the Company's success in raising occupational work safety awareness.

The frequency of workplace incidents in 2018 also decreased, i.e. from four types of accidents to 3 (two minor and one moderate, experienced by 3 male workers and 0 female workers), all were in our operational area in Bandung regency. With the occurrence of 1 case of a moderate type accident, both the incident rate and frequency rate of the Company increased to 0.73 for each.



Meanwhile, total man-hours in 2017 was 8,495,864 hours while in 2018 it was 9,856,946 hours. The calculation of Total Recordable Incident Rate (TRIR) and Frequency Rate (FR) of the events above is as follows:

#### Total Recordable Incident Rate (TRIR) and Frequency Rate (FR)

Description	Year				
	2014	2015	2016	2017	2018
TRIR	0	0.58	0.59	0	0.73
FR	0.00	0.00	0.00	0.00	0.73

Note :

Total Recordable Incident Rate (TRIR) =  $RC \times 1,000,000 / \text{MANHOURS}$

Frequency Rate (FR) =  $(LWC + RWC) \times 1,000,000 / \text{MANHOURS}$

Recordable Case =  $RWC + LWC$

To further prevent and minimize workplace accidents in the future, the Company has prepared the following programs to be implemented:

- Dissemination and enforcement of obligations of every employee to adhere to all work procedures as stated in the SHE-based Standard Operating Procedure (SOP) in conducting their tasks;
- Analysis on every accident to avoid similar accident in the future;
- Restriction on employee rotation.



## OCCUPATIONAL HEALTH

As a form of commitment to health conditions of the employees, the Company consistently implements all relevant laws and regulations. In its implementation, the Company realizes various activities aimed at improving the culture of occupational health awareness to help maintain workers' health. We provide education, training, counseling, prevention and control of risk of suffering from either serious or infectious diseases, such as dengue, malaria and so on, to workers in an effort to increase awareness of occupational health.

Our occupational health management activities are classified as medical and working environment health. For the medical health, we have initiated cooperation with privately-owned and public hospitals with sufficient facilities near the operational area in Pangalengan or Bandung and the headquarters in Jakarta.

Occupational health implementation in medical areas include health counseling/talks for the employees and their families as well as regular medical checkups for employees as mandated in the Employment Act (UU Ketenagakerjaan) and other provisions stated in Collective Work Agreement. For managing occupational health that relates to occupational environmental health, we coordinate through our SHE unit to carry out activities such as noise/decibel measurement, sanitation treatment, emission level measurement, and others.

The following are occupational health activities that we implemented in 2018:

## Activities to Support Occupational Health in 2018

Activity Type	Employee	Number of Participants
<b>Promotion/Counseling</b>		
Health Talk "Healthy Life and Free from Diphtheria" by dr. Ervita Ritonga, Mkes, Sp.PD.	Employee	38 people
Health Talk "Counseling on Dental and Oral Health" by drg. Yuan Anthony from RSGM Maranatha	Employee	40 people
Health Talk "Spiritual Emotional Freedom Technique" by Ahmad Husaini, DR. M.Ag.	Employee	16 people
Health Talk "Bioecology and Management of Vectors, Disease Reservoirs, and Pest Control" by Andre Dian Permana	Employee	15 people
Health Talk "Stress Management" by dr. Veranita Pandia, Sp.KJ(K). M.Kes from RSU Hermina Pasteur	Employee	17 people
Health Talk "Hypnotherapy: Get Healthy by Optimizing Subconscious" by Dr. H. Yeti Heryati, M.Pd. C.Ht.	Employee	19 people
SHE Talk "Treating Kidney with CERDIK"	Employee	21 people
Health Talk "Quit Smoking by Tapping Method"	Employee	34 people
<b>Disseminating bulletin on health through email</b>		
"Noise at Workplace"		104 people
"Good Housekeeping for Occupational Safety, Health & Productivity"		104 people
"Office Ergonomics"		104 people
"Heat Stress"		104 people
"Maintaining Food Intake During Fasting"	All SEGWWL employees through	104 people
"Beware of Myalgia (Nyeri Otot)"		104 people
"Get to know acute pharyngitis (throat inflammation)"		104 people
"Measles and Rubella Immunization Campaign"		140 people
"World AIDS Day 2018 – I am Courageous, I am healthy "		140 people
"GEA"		104 people

## APPRECIATION

Various programs carried out to improve the performance of OHS aspects throughout 2018 were fruitful with the achievement of awards related to SHE from various independent institutions. The awards are as follows:

- Zero Accident Award for certain areas from the Ministry of Manpower of the Republic of Indonesia.
- PROPER award in Gold category from the Indonesian Ministry of Environment.
- P2-HIV and AIDS at workplace Program Award (Platinum) from the Ministry of Manpower of the Republic of Indonesia.
- Receipt of Subroto award from the Ministry of Energy and Mineral Resources.
- Receipt of ADITAMA Award in the Safety and Environment Management category.
- Receipt of ISO/ISC 17025 accreditation regarding laboratory standards.

7

# Developing the Competence of Wayang Windu People



AS THE MAIN ASSET AND STAKEHOLDERS WITH STRATEGIC ROLE, THE COMPANY HAS HIGH COMMITMENT TO FOCUS ON MANAGING HR AS HUMAN CAPITAL AND IMPLEMENT COMPETENCY DEVELOPMENT PROGRAM, GIVE THEM THE OPPORTUNITY TO PRODUCE WORK AND OPTIMALLY GROW AS THEIR CAPACITY, AS WELL AS EVALUATE THEIR PERFORMANCE AND PROVIDE REMUNERATION ACCORDING TO THEIR CONTRIBUTION IN FAIR AND TRANSPARENT MANNER. THE ENTIRE HR MANAGEMENT PROGRAM IS CARRIED OUT AS WELL AS POSSIBLE AS THE COMPANY'S COMMITMENT TO FULFILL THE EXPECTATION OF STAKEHOLDERS AND ENSURE BUSINESS CONTINUITY.



## COMMITMENT AND GENERAL POLICY OF HUMAN RESOURCES MANAGEMENT

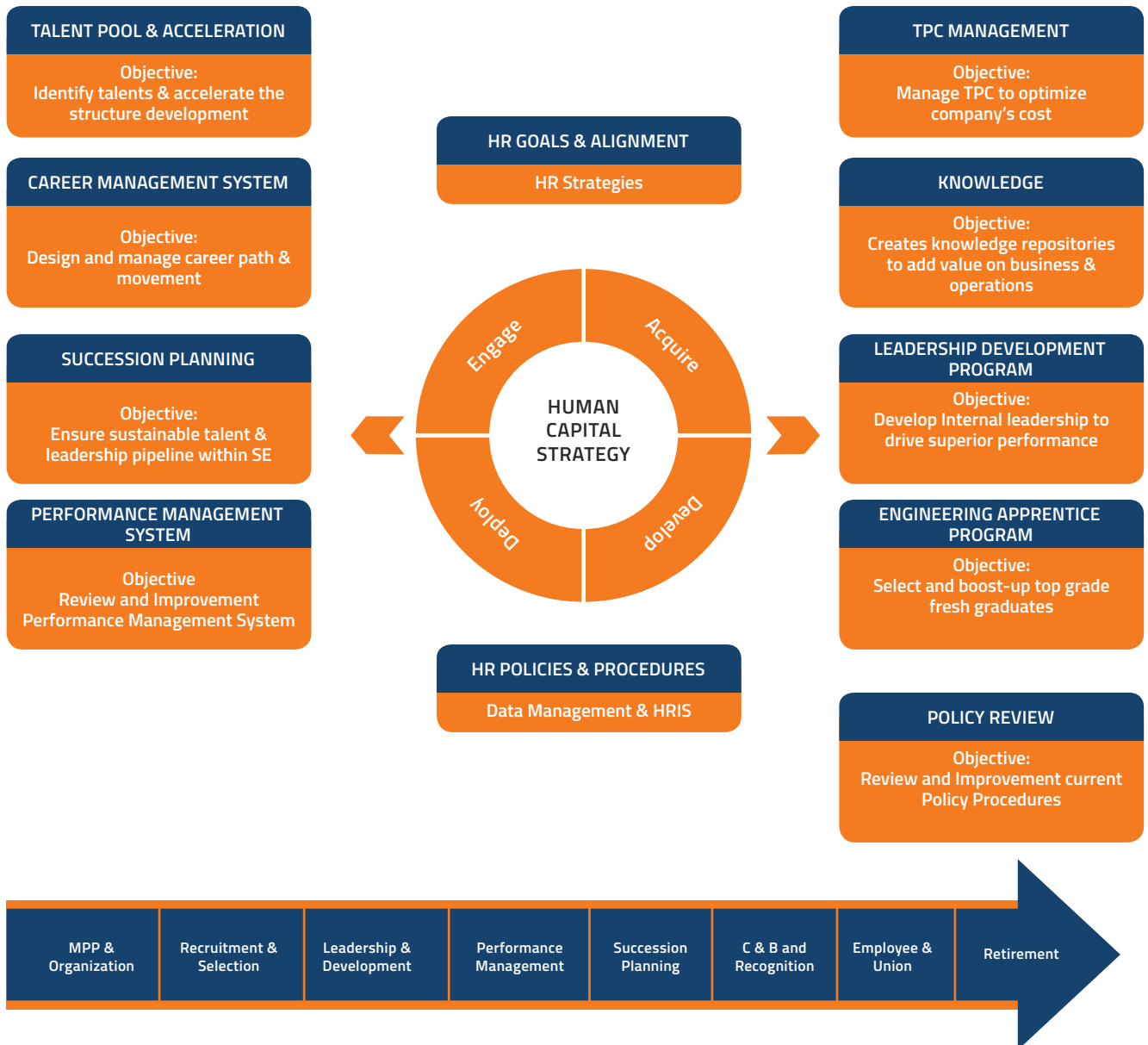
[GRI 103-1, GRI 103-2]

For SEGWLL, human resources (HR) is one of the most valuable assets as well as important partners in supporting efforts to develop and carry out operational activities. They are capital ("human capital") and the spearhead to the achievement of three sustainability goals: profit, people and planet. They have a strategic role in generating profit (profit), creating welfare to the society (people), and preserving the environment (planet). Therefore, we view HR as one of the main stakeholders whose expectations must be considered and fulfilled and who is also demanded to be held responsible for ensuring business continuity. In terms of sustainability, HR is also one of the main stakeholders who has a central role in realizing the Company's vision and mission.

In relation to business development, the Company focuses on the management of human resources or also Human Capital, on efforts to increase competence, starting from the recruitment stage through selection of qualified and well-screened workers, to improvement of employee competence and provision of remuneration package that are suitable with the employee's work performance based on performance assessment. This policy is in line with the formulation of global sustainable development goals set in item 8 of the SDGs, "Decent Work and Economic Growth – To promote sustained, inclusive and sustainable economic growth, job opportunity creation, full and productive employment and decent work for all".

To ensure the best HR management results, the Company implements an equal opportunity policy for all employees to develop optimally according to their potential. SEGWLL does not have a subsidiary, thus the entire discussion and policy in this description only covers the discussion of the rights and obligations of all Company employees. SEGWLL's HR development strategy initiative can be illustrated briefly through the following diagram.

SEGWWL's HR development strategy is illustrated as follows:





## MAIN PILLARS OF HUMAN RESOURCES DEVELOPMENT [GRI 103-3]

To ensure optimum HR performance, the Company applies **Human Resources Goals & Alignment of Human Resources Strategies (HRG & AHRG)**, which consists of TPC management implementation, competence development, career advancement system, policy evaluation, upholding employees' rights and pension preparation.

HRG & AHRG is comprised of 9 main pillars, i.e.:

1. Third party contract Management,
2. Engineering Apprentice Program,
3. Knowledge Management,
4. Leadership Development Program,
5. Talent Pool & Acceleration,
6. Career Management System,
7. Succession Planning,
8. Performance Management System dan
9. Policy Review.

### ▪ Third Party Contract (TPC)

By maintaining the accordance of the Company's needs and business development, the Company considers the parameters for contract-based human resources. These parameters include worker composition, budget, and the efficiency and productivity of employees. In this way, we expect that the discrepancy between the needs and the talents available can be well managed to support an effective and efficient human resources performance in achieving the Company's goals.

### ▪ Engineering Apprentice Program

By considering the competence of prospective employees from the locals in the recruitment and to support the increase in portion of local employees, we recruit and develop fresh graduates based on the long-term needs of human resources.

In cooperation with the local government, the Company provides scholarships for students in junior high school, high school and university, the 'Kejar Paket C' educational program as well as sewing training for the locals. Through this mechanism, up to the end of 2018, the number of our local employees is 28 (or 13%) of the total 215 permanent employees.

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

Year	Total Employees	Local Employees	Percentage (%)
2014	505	393	78
2015	403	223	55
2016	252	103	41
2017	210	26	12
2018	215	28	13

In 2018, the Company recruited 11 employees, 6 of whom are male and 5 female employees. [GRI 401-1]

### Total New Employees by Age

Year	2014	2015	2016	2017	2018
<30 years old	2	2	1	7	8
30-50 years old	1	3	4	8	14
>50 years old	-	1	1	1	0
Total	3	6	6	16	22

### Total New Employees by Location

Year	2014	2015	2016	2017	2018
Pangalengan	1	5	6	9	8
Jakarta	2	1	-	7	14
Total	3	6	6	16	22

### Total New Employees by Gender

Year	2014	2015	2016	2017	2018
Female	1	1	-	5	6
Male	2	5	6	11	16
Total	3	6	6	16	22

These employee candidates attended an orientation program prior to becoming permanent employees, which includes a training for enriching employee's basic competence and an induction program on occupational health, safety and environmental conservation.

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

In 2018, the management continued to focus on preparing employees for leadership roles at the level of manager, senior manager and vice president (established leaders) to meet the target of Star Energy Geothermal (Wayang Windu) Limited for the next five years up to

2021. The management also focused on supervisor and superintendent (emerging leader) level regeneration, so employees can take the posts of their leaders in the future. SEGWWL nurtures employees for leadership in cooperation with INSEAD under the program called the “Star Energy Leadership and Management Program”.

▪ **Performance & Career Management System and Succession Planning [GRI 404-3]**

The Company consistently executes a competence-based human resources management system, i.e. executive level development through improvement of human resources competence according to the requirements of each level. For measuring employees’ performance, we develop a performance evaluation system that is based on the individual and team’s key performance indicator (KPI). This also serves as the basis in career advancement and remuneration. Every year all employees (100%) undergo performance review in accordance with the respective KPIs. The Company also prepares a succession planning program by taking into account human resources competence and career advancement in our decision making. For 2018, as many as 9 employees were promoted, consisting of 8 male employees and 1 female as employees, as illustrated below.

**Total Employees Receiving Career Advancement**

Description	2014	2015	2016	2017	2018
Promotion	50	0	0	37	9
Demotion	0	0	0	0	0
Job Transfer/ Rotation	2	0	2	0	0

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

In optimally managing human resources, SGWWL considers both the employees’ interests and the Company’s capability. As part of the implementation of the quality human resources management policy and the fair and responsible consideration of the two parties, we apply human resources policy as follows:

- Complying with all rules and regulations in manpower.
- Maintaining good relations with employees based on mutual cooperation and the periodically reviewed Contractual Bargaining Agreement (CBA).
- Applying a fair, transparent and accountable remuneration system based on performance.
- Respecting employees’ rights including providing full support in the establishment and activities of the Employee Union.
- Conducting programs of employee competence enrichment and training to improve individual, team and eventually corporate performance.
- Applying equality in career advancement and remuneration by opening equal opportunities for all employees in developing their career in line with their competence and the Company’s growth.

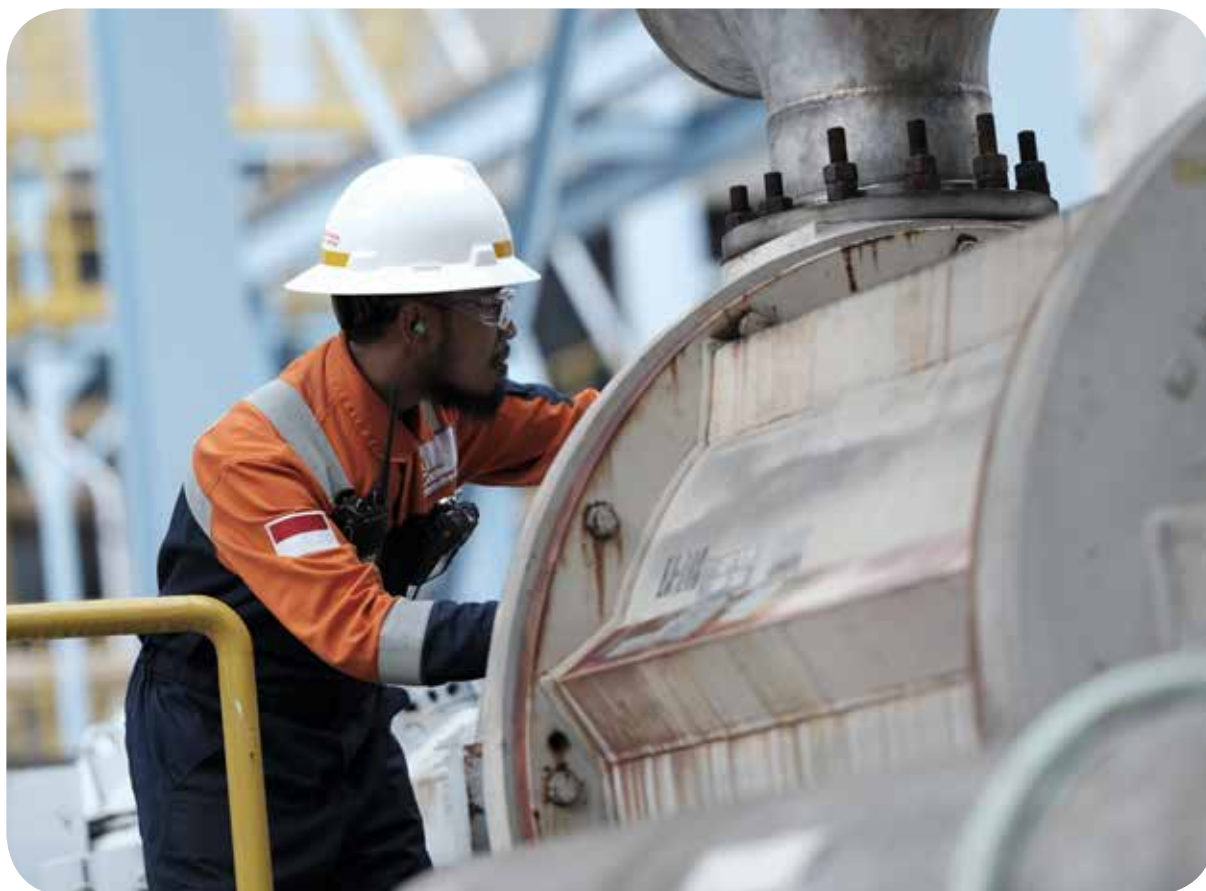
As a result of consistent application of equality principle during the reporting year, there were no discrimination cases related to ethnicity, race, religion, or gender at any level of position at the Company. The description of the equality principle application can be seen in employee composition based on position in the “Employee Demography” section.

**WELFARE PACKAGE**

SEGWWL determines a fair remuneration policy that is based on salary grade level (SGL). It is expected that the policy would reflect the balance in everyone’s position level, duty, and responsibility. The policy also consists of religious Holiday allowance, health insurance, pension funds, social security and annual leave benefits, all provided in accordance with the applicable regulations, outside the remuneration. There are two types of remuneration based on employment status: permanent employee and contract employee.

However, some types of benefits are not applicable to contract employees, such as pension funds. This welfare package is given to all employees located in the head office in Jakarta as well as in the operational site of SEGWWL in Pangalengan.

**[GRI 401-2]**



The Company also provides other incentives for employees, i.e.:

- Educational/training fee
- Regular medical check-up
- Loans on salary
- Prostheses, glasses and hearing aid purchase
- Scholarship for employee's family member
- Hajj fund
- Property fund
- Annual holiday leave
- Assistance for infertility and artificial insemination

SEGWWL specifically applies a policy of a 90-day leave for female employees who are in labor and provides assurance of a position on their return. During maternal leave, the Company still will provide employees' rights, comprising salary and benefits. The Company also provides unpaid leaves for employees who undergo an education program abroad; they would be able to work again at the Company after completion of their education.

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

The Company cooperates with a pension fund management company to provide pension program for its employees. The pension program aims to ensure the sufficiency of pension funds for employees entering retirement age. The benefit provided to these employees is a pension fee payment. Pension fee funds are derived from two sources, i.e.:

1. The Employer's Contribution amounting to 6% of employee's Basic Pension Income (PhDP).
2. Employee's Contribution amounting to 2% of employee's PhDP at the time of entering retirement age, then all pension funds eligible for the employee would be provided in a lump sum through the Financial Institution Pension Fund (DPLK).

### Award Program for Employees

In addition to the programs above, we conduct an employee appreciation program as one of the forms of work achievement evaluation and mentorship for employees. Employee appreciation comprises of an Achievement Award, Employee of the Year Award, Dedication Award and Retirement Award.

## ENRICHING INDUSTRIAL RELATION QUALITY [GRI 102-41]

The Company fully supports the Employee Union's activities in bridging the communications between the employees and management to the best possible effort in order to fulfill the expectation of workers so as to encourage optimum performance of the Company. We believe this can be achieved easier if there is a constructive interaction with the employees collectively through the Employee Union. By so doing, there will be two-way and mutually understanding communication that can result in agreements that can support the employees to perform their work optimally and the company to fulfill the employee's rights.

It has been agreed that the Contractual Bargaining Agreement (PKB) that was valid since September 10, 2015 up to September 9, 2017 had been agreed to be extended for a year up to 2018.

The PKB was registered at the Manpower and Transmigration Service of the Bandung Regency, with the Decision Letter No. 230/72/I/HIPK/2006 dated January 16, 2006 and at the Manpower and Transmigration Ministry c.q. Directorate General of Industrial Relations and Labour Social Security Development, with No. 134/Pdf.03/PKB/VIII/2012.

The points in the PKB are a collective agreement between the employees and the Company, and these have been agreed by all SEGWWL employees who are members of SP-WWL (43%) upon the completion of the deliberation. Therefore, all employees have been protected and their rights have been represented in the Contractual Bargaining Agreement.

The PKB regulates the basic provisions and agreements related to employee rights, obligations and company relations, including a minimum notice time in case of a substantial change in work conditions, such as job unit closure, etc. The PKB also regulates settlement of differences of opinions between the employee and the Company's management. During the reporting period, there had not been any case of dispute which may lead to a strike.

### Freedom of Association [GRI 407-1]

SEGWWL assures the employees' right to join an association and establish an employee organization or trade union in the Company's environment, including the freedom to be the part of that organization's management. This is in accordance with the Law Number 21 of 2000 concerning Employee Union/Trade Union. The total number of employees who are members of SEGWWL Employees Union (SP-SEGWWL) is 93 out of 215 permanent employees or 43%.

Employees can propose improvement ideas, give opinions or constructive criticisms for the improvement of the operational pattern and welfare to the Top Management through the SP-SEGWWL. This input can be conveyed in the General Meeting of Shareholders or interactional forums between Top Management and SP-SEGWWL. These important mechanisms show how employees, as stakeholders, contribute to the Company's policy orientation and are responsible for the continuity of business.

### Convenience in Work Environment

SEGWWL believes that working environment affects the effectiveness of operational activities. Thus, the Company develops work environment both physically and psychologically so that the working atmosphere is conducive, healthy, safe and convenient at all times, to further positively influence the employees' performance. Such conducive condition is demonstrated in the relatively low turnover of employees.

During the reporting period, 9 of SEGWWL's permanent employees resigned. This accounts for only 4.19% of the total 215 employees of the Company as per end of year.

[GRI 401-1]

## Employee Turnover based on Causes

[GRI 401-1]

Type	2014	2015	2016	2017	2018
Retire	5	3	0	1	3
Deceased	0	0	0	0	0
Resign	4	4	4	18	9
<b>Total</b>	<b>9</b>	<b>7</b>	<b>4</b>	<b>19</b>	<b>12</b>

## Man-Hour and Changes in Man-Hour

The Company applies a regular man-hour, shift and special man-hour for the operational and security tasks. We provide compensation in the form of an overtime fee in line with the regulation provisions to the employees who complete their task longer than the standard man-hour. In case of a change in regulation concerning working time, operational patterns and/or operational terminations, we spare three months at the minimum before the change comes into effect.

## Employees' Remuneration

Remuneration for employees comprises a basic salary, leaves pay, long-service reward, employee of the year, performance

incentive, bonus and other allowances. (See description of "Welfare Package"). The amount of minimum wage of a new recruit of lowest level is higher compared to the regional/provincial minimum wage.

As an example, below is a table of comparison between a newly recruited SEGWWL employee's salary and the minimum wage of the closest main region. [GRI 202-1]

## Comparison of Wage/ Remuneration to Provincial Minimum Wage [GRI 202-1]

Year	Employee Salary (Rp)	Amount of Wage /Provincial Minimum Wage (Rp)	Percentage
2014	3,539,000	1,565,008	226.10%
2015	3,539,000	2,001,195	176.80%
2016	3,539,000	2,280,175	155.20%
2017	4,500,000	2,468,289	182.30%
2018	4,956,000	2,678,028	185.06%



## Human Rights Recognition

SEGWWL is fully committed to paying attention to human rights recognition and upholding at every stage of operational activity. Freedom of association, political practice, channeling of political aspirations, including giving suggestions for the Company's growth (through the Employee Union of other available mechanism for that purpose) are manifestations of the Company's respect to human rights.

## Training and Dissemination of Human Rights

SEGWWL conducts training of competence improvement for Company Security Unit to ensure that human rights are upheld in the security measure of the Company's assets. To that end, the curriculum of training is adjusted to that of prepared by the National Police (Polri), which includes training on human rights for all security guards.

## Child Labour

SEGWWL highly upholds the Government's policy as stated in Law Number 13 of 2003 on employees who are minors by setting minimum requirements for recruitment, i.e. education level of junior high school (SLTP) or equivalent, and minimum age of 20, proven with a legitimate identity card.

## DEMOGRAPHY AND TOTAL EMPLOYEES [GRI 102-8]

There are three statuses of SEGWWL's employees, namely permanent employee, non-permanent employee and outsourced employee. In the reporting period of 2018, there were a total of 215 permanent employees, 119 of which work at the Wayang Windu fields, while the remaining 96 others work at the Headquarters.

## Total Worker by Employment Status [GRI 401-1]

Type of Status	2014	2015	2016	2017	2018
Permanent Employee	214	221	221	169	178
Non-Permanent Employee	5	2	7	10	15
Outsourced Employee	286	180	24	30	22
<b>Total</b>	<b>505</b>	<b>403</b>	<b>252</b>	<b>209</b>	<b>215</b>

## Total Worker by Work Station

Type	2014	2015	2016	2017	2018
<b>Permanent Employee</b>					
SEGWWL Field, Pangalengan	183	191	187	96	96
Head Office	31	30	34	73	82
<b>Total</b>	<b>214</b>	<b>221</b>	<b>221</b>	<b>169</b>	<b>178</b>
<b>Non-Permanent Employee</b>					
SEGWWL Field, Pangalengan	4	2	7	7	9
Jakarta Head Office	1	0	0	3	6
<b>Total</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>10</b>	<b>15</b>
<b>Outsourced Employee</b>					
SEGWWL Field, Pangalengan	277	169	22	26	15
Jakarta Head Office	9	11	2	4	7
<b>Total</b>	<b>286</b>	<b>180</b>	<b>24</b>	<b>30</b>	<b>22</b>
<b>Grand Total</b>	<b>505</b>	<b>403</b>	<b>252</b>	<b>209</b>	<b>215</b>

Total non-permanent employees were 13 personnel while the number of outsourced employees was 22, whose duties includes maintenance, cleaning, office assistant, driver and catering. The number of outsourced and non-permanent employees experienced a slight fluctuation from the previous year of 30 permanent employees and 12 non-permanent employees due to changes in the company's business strategy that previously focused on 2 (two) business units, namely:

- Oil and gas
- Geothermal.

In 2017, the Company focused on the development of new and renewable energy.

The majority of the permanent employees in 2018 hold a senior high school (SLTA) diploma and a bachelor's degree (S1), totaling 27.46% and 24.35% respectively. While employees with bachelor's degree took up to 36.78%, with master's degree at 10.88%, and the remaining number had doctoral degree.

High school and D3 graduates accounted for the biggest composition of the Company's total workforce, as the Company largely needs workers in non-operational scope, specifically in the security sector, whose main duty relates to safety and field patrol that require less skill but stronger physical condition. The composition of employees in 2018 based on educational level is shown in the following table:

#### Employee Composition based on Educational Level

Description	2014	2015	2016	2017	2018
Primary/ Secondary School	3	3	3	0	0
High School	100	100	100	52	53
Diploma (1-3)	34	34	35	47	48
Bachelor's degree (S1)	69	72	76	62	71
Master's degree (S2/Master)	13	13	13	17	21
Doctoral degree (S3/Doktor/ Ph.D)	0	1	1	1	1
<b>Total</b>	<b>219</b>	<b>223</b>	<b>228</b>	<b>179</b>	<b>193</b>

#### Employee Demography based on Gender

Gender	2014	2015	2016	2017	2018
Female	21	19	19	39	38
Male	198	204	209	145	155
<b>Total</b>	<b>219</b>	<b>223</b>	<b>228</b>	<b>179</b>	<b>193</b>

#### Employee Demography based on Age

Age	2014	2015	2016	2017	2018
19-30	31	28	31	31	32
31-40	60	63	63	62	67
41-50	114	121	122	64	67
>50	14	11	12	22	27
<b>Total</b>	<b>219</b>	<b>223</b>	<b>228</b>	<b>179</b>	<b>193</b>

SSEGWWL does not discriminate nor restrict the 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. 38 female employees or 19.69% of the total employees. Most of our female employees are stationed in the administration and other jobs other than field operation.

In 2018, the Company's management is handled by 29 managers and 60 supervisors assisted by 45 staff and 59 non-staff members as shown in the following table:

#### Employee Composition based on Position and Level 2018

Year	Description					
	Total	Gender		Age		
		Male	Female	<30	30-50	>50
Manager	29	26	3	0	22	7
Supervisor	60	46	14	3	50	7
Staff	45	32	13	23	19	3
Non Staff	59	51	8	7	42	10
<b>Total</b>	<b>193</b>	<b>155</b>	<b>38</b>	<b>33</b>	<b>133</b>	<b>27</b>

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# Sustainability Governance



SEGWWL IS FULLY COMMITTED TO IMPLEMENTING QUALITY CORPORATE GOVERNANCE BEST PRACTICES TO SUPPORT VARIOUS SUSTAINABILITY DEVELOPMENT GOALS WHILE STRENGTHENING HARMONIOUS RELATIONSHIP WITH STAKEHOLDERS TO ACHIEVE OPTIMUM ADDED VALUE.

### COMMITMENT, OBJECTIVES, AND TARGET OF BEST GOVERNANCE IMPLEMENTATION

SEGWWL is committed to always improving good corporate governance (GCG) implementation in all business activities that is aimed to:

- Achieve maximum growth and returns to improve corporate earnings, increase long-term shareholder value, and uphold stakeholder welfare;
- Build and foster excellent relationship between our Shareholders, Board of Commissioners, Directors, and Stakeholders;
- Support internal control activities and business development;
- Improve resource management to increase accountability to stakeholders;
- Improve welfare of our employees.

SEGWWL strives to enhance the quality of good corporate governance by delivering optimum benefits to all stakeholders through consistent application of five basic GCG principles; namely **Transparency, Accountability, Responsibility, Independency, and Fairness.**

The Company has fulfilled the necessary prerequisites as follows to improve the quality of GCG implementation:

- Collective Bargaining Agreement, consisting of binding provisions for employees concerning their duties and responsibilities and its obligation to comply with labor regulations.
- Code of Conduct, containing conduct guidelines when interacting with internal and external parties as well as professional conduct in the Company's environment.
- Whistleblower Policy Guidelines, as a reference for all parties to contribute in preventing and overcoming abuse of authority and violation that leads to corruption and fraud.

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

Wayang Windu's corporate structure and governance are composed of Shareholders and Directors, the latter manages daily business of the Company. The highest decision-making is vested in the Directors while the highest authority is vested in the General Meeting of Shareholders (RUPS, Rapat Umum Pemegang Saham). To determine the business direction and evaluate Board of Directors' performance, Shareholders convene the Annual General Meeting of Shareholders (RUPS) and the Extraordinary General Meeting of Shareholders when deemed necessary.

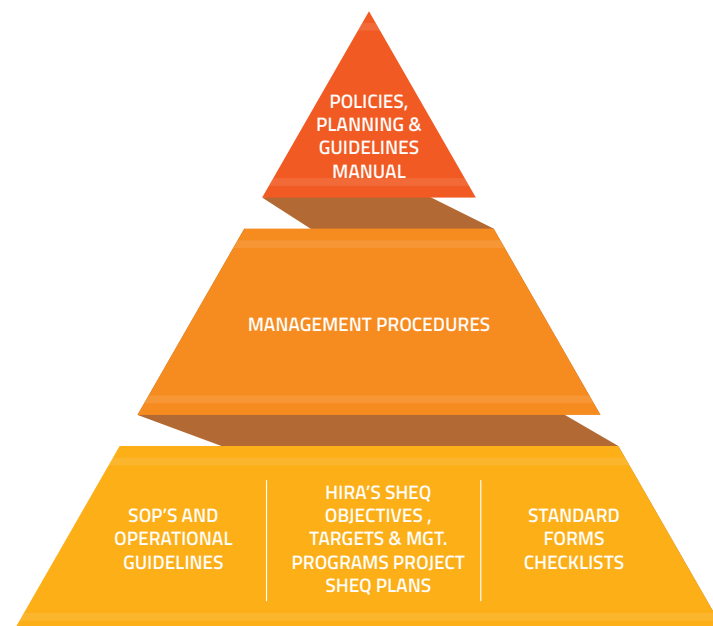
## WAYANG WINDU INTEGRATED MANAGEMENT SYSTEM (WIMS)

[GRI 102-11, GRI 102-12]

The Company applies several accredited operating standards, namely ISO 14001:2015 in environmental management, SMK3 and OHSAS 18001:2007 in occupational safety and health, ISO 9001-2015 in quality management, and ISO 17025:2008 in testing laboratory and calibration competencies, in addition

to other operating standards which has not been accredited, such as: maintenance operation standards and so on. To facilitate the administration of all operating standards, we have integrated all operating standards into one single system that we call SEGWWL Integrated Management System or Wayang Windu Integrated Management System (WIMS).

WIMS is an effective mechanism to improve business and environmental management performance. In daily operations, we ensure sustainability in the PLANNING stage by conducting environmental Hazard Identification and Risk Assessment (HIRA); in the IMPLEMENTATION stage by implementing various standard procedures; in the CHECK stage by engaging both Internal Audit and External Audits (such as PROPER Audit, ISO 14001, OHSAS 18001, OSHMS, and audits by the Environmental Conservation Office of Bandung Regency, Office of New Energies, Renewable Energy, and Energy Conservation, and so on); and, in the ACTION stage by conducting Performance Improvement Request to demonstrate continuous improvements. The implementation of SEGWWL's Integrated Management System is part of our unwavering effort to consistently improve good corporate governance.



### WAYANG WINDU POLICY STATEMENT

## INTERNAL CONTROL

SEGWWL implements internal control as part of the application of GCG basic principles of accountability and transparency. The management guarantees the effectiveness and efficiency of operations, implementation of all operating procedures, compliance with laws and regulations, as well as punctuality and reliability of financial reporting through Internal Audit Department.

The description of the implementation of duties, responsibilities, authority and reporting mechanism of audit finding has been clearly stated in the Internal Audit Charter which guides the Internal Audit personnel in carrying out audit activities. The Internal Audit Charter has been approved and ratified by the Board of Directors and is known by the Company's Owners.

In addition to Internal Audit Charter, the Company's Internal Audit personnel also always refer to the International Standards for Professional Practices of Internal Auditing issued by The Institute of Internal Auditors (IIA) in carrying out their duties.

To ensure compliance with prevailing legislation, we refer to the five regulatory references to benchmark our audit activities: Principles of Good Corporate Governance, Code of Conduct, Sarbanes-Oxley Act, COSO Frameworks, and Enterprise Risk Management.

In an effort to maintain and enhance the quality of audit findings according to the applicable audit standard, the Internal Audit team continues to improve their competency through various education, including continuous and multi-level education, professional certification, and training in operational field. Our auditors are also equipped with specially-designed trainings on corruption and its prevention. To prevent and minimize the unwanted practice, the Internal Audit team conducts routine inspections to units that are susceptible to corruption, such as the procurement, maintenance, and finance units.

The Company imposes harsh sanctions on discovery of strong indications of corruption, ranging from termination to criminal charges. In 2017, there were no incidents of corruption that led to criminal proceedings. **[GRI 205-3]**

## BUSINESS ETHICS **[GRI 102-16]**

As a form of commitment to quality increase of GCG best practice implementation, the Company has completely reviewed and improved Code of Conduct that regulates the commitment of all employees at every level to continuously uphold and apply international-standard business ethics. Every employees at all level of the Company is required to comply and implement every provision in the Code of Conduct by signing a "Statement of Commitment."

Items listed in the Code of Conduct include:

- **Whistleblowing System**  
We have consistently implemented a Whistleblowing System as a measure for transparency, accountability, and fairness in business relationships. The system is part of our plan to improve the quality of Good Corporate Governance, including participation to eradicate corruption, grafts, and other malfeasances. The standard also contains mechanisms that are designed to encourage reports and ensure the safety and confidentiality of both whistleblowers and investigators.
- **Ban on Dispatch and Receipt of Gifts and Donations**  
The Company consistently prohibits the dispatch or receipt of gifts and donations, in any way or form, both from internal and external parties. The ban was put in place to prevent interference in the decision making process and minimize conflicts of interest, which may impair our business partners' trust in our integrity.
- **Policies on Investment and Procurement of Goods and/or Services **[GRI 414-1]****  
The Company's procurement policy is founded on the principles of transparency, accountability, effectiveness, efficiency, openness, fairness, and non-discrimination. We make every effort to ensure that the procurement of goods and services are conducted according to prevailing legislation - demonstrating our commitment to business principles that respects healthy competition and honest and non-monopolistic business practices.

When selecting contractors for contracts of substantial value, such as exploration and exploitation drillings, we have always inserted a non-violation and respect to human rights clause, and only reputable companies well-known to its respect to human rights are considered during the process. All new suppliers and partners undergo a screening process aimed to ensure regulatory compliance.

- **Equal Opportunities**

Before exploration or exploitation takes place, we conduct a series of comprehensive environmental impact analysis, including social impact to local residents. We also enforce equal opportunities in recruitment, competence building, and career development. Career advancement is determined based on a dynamic assessment system that is held openly, including to talented people from local communities. This is our firm commitment, resulting in zero complaints of discrimination in this reporting year.

**[GRI 406-1]**

- **Political Activity and Policy on Politics**

SEGWWL strictly prohibits the use, both directly and otherwise, of the Company's funds or assets by political parties or candidates of political parties. We are never involved in the formulation or preparation of public policies. Our involvement in public policy is only limited to amendments to investment regulations in geothermal power that we offer to investment associations or companies working in geothermal energy.

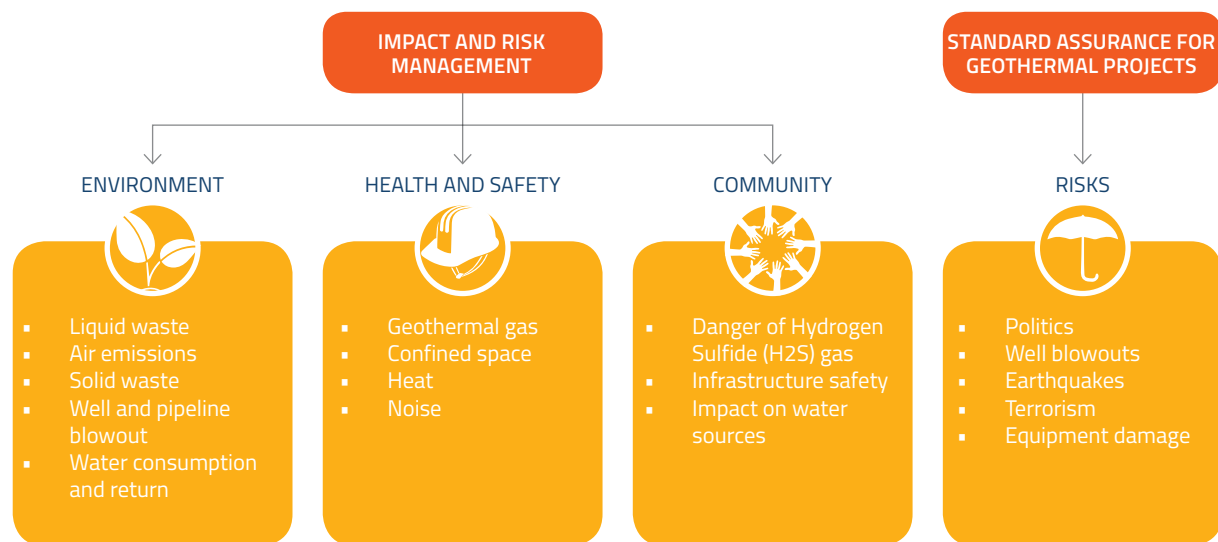
Our other involvements are proposals on community development programs designed to complement similar programs prepared and/or executed by the Central/Regional Government. **[GRI 415-1]**

- **Suggestions to Directors**

SEGWWL gives every opportunity for our employees to submit their opinions and offer suggestions to the Directors through formal mechanisms, such as in Employee Union-Management meetings or in working meetings. The mechanism is aimed to promote conducive relationship among internal stakeholders, especially between the Management and employees such that it positively impacts the Company's performance.

## RISK MANAGEMENT

We develop and implement Risk Management Policy as part of internal control system to minimize potential losses and maintain business continuity. Our priority is in occupational accident risk that is closely related to environmental damage. In addition to work injury risk, we also carefully manage and mitigate other risks, i.e. financial risk, risk of analytical error in the exploration process, and operational risk at drilling and power generation stages. To mitigate these risks, we establish Risk Control Management that periodically conducts evaluation meeting on the follow-up of risk mitigation recommendations.



## EXTERNAL INITIATIVES AND ASSOCIATION MEMBERSHIP

[GRI 102-12, GRI 102-13]

SEGWWL has actively adopted a number of external initiatives in response to climate change, such as the Clean Development Mechanism/CDM, which is part of the Kyoto Protocol, ratified into law by the Government of Indonesia into Law No. 17 of 2004 concerning the Ratification of Kyoto Protocol in the United Nations Framework Convention on Climate Change (UNFCCC).

The Company has also implemented a number of accredited operating standards, such as ISO 14001:2015 on Environmental Management, SMK3 and OHSAS 18001:2007 on Occupational Health and Safety Management System, and ISO 9001: 2015 on Quality Management.

Furthermore, SEGWWL actively promotes the creation of a favorable investment climate to generate power using geothermal energy through advocacy in the following associations:

- Indonesian Geothermal Association (API, Asosiasi Panas Bumi Indonesia)
- Indonesian Electrical Society (MKI, Masyarakat Ketenagalistrikan Indonesia)
- Indonesian Renewable Energy Society (METI, Masyarakat Energi Terbarukan Indonesia)

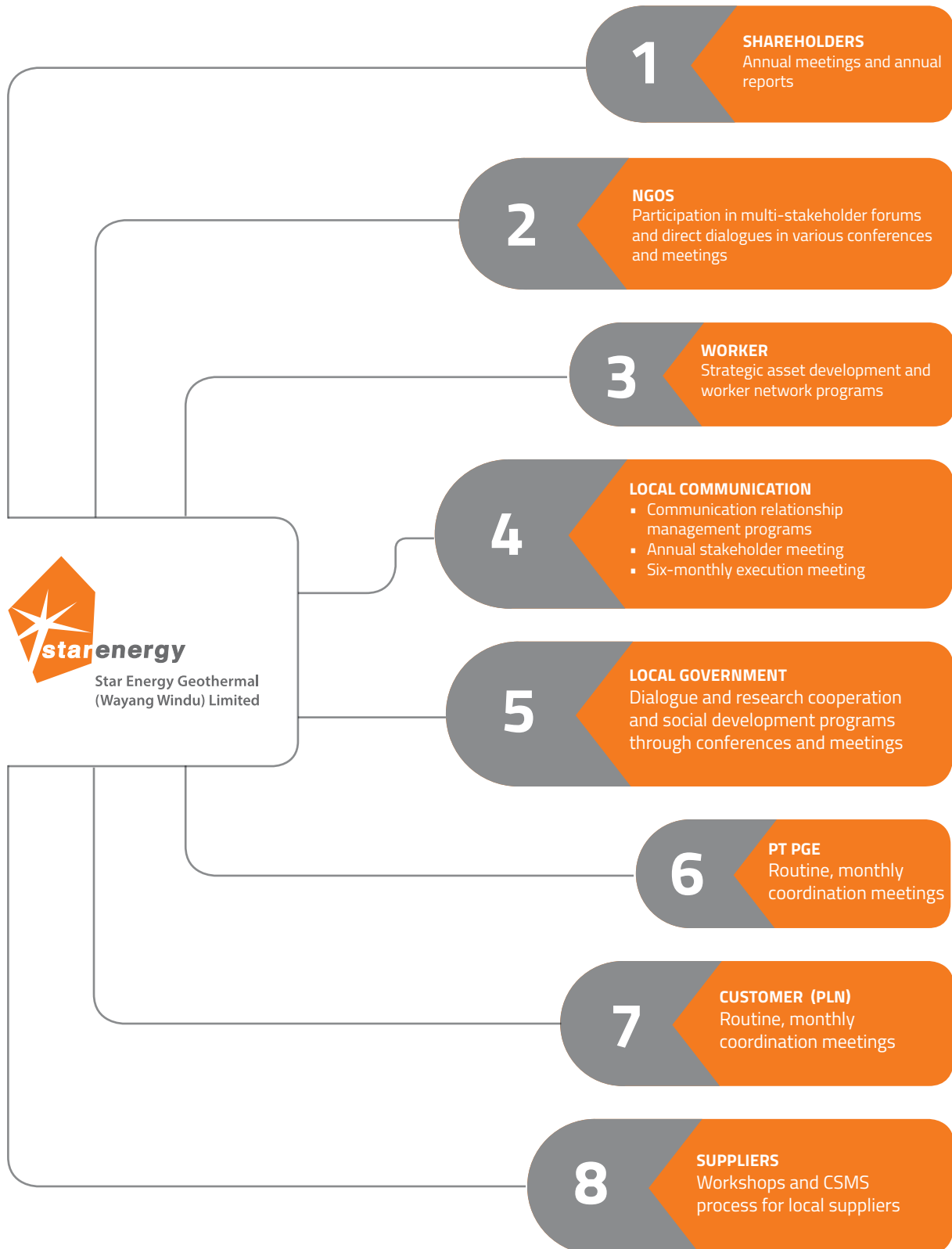
## STAKEHOLDER MANAGEMENT

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

SEGWWL believes that building harmonious relationship with every stakeholder is imperative to ensure the Company's going concern. To that end, we promote harmonious relationships with stakeholders through a stakeholder quality management system. In doing so, the Company has identified, in-detail, stakeholder groups with the strongest interest in the Company's going concern and that meet the Company's expectations with available resources.

Our direct and indirect stakeholders are the customers, employees, government/regulators, partners/contractors/suppliers (vendors), PLN, PGE, NGOs, and local communities. Through a relationship feedback loop, we strive to understand and meet the expectations of our stakeholders as best as we can using available resources. We also wish for our stakeholders to know the extent of our efforts towards meeting their expectations, the major issues we face, and the mutual anticipation of the results that we can reasonably expect to deliver.

The following is Diagram of Stakeholders Identification and Their Needs



## Summary of Stakeholder Management

Stakeholders [GRI 102-40]	Identification and Selection of Stakeholders [GRI 102-42]	Approach to Stakeholder Engagement - Engagement Frequency [GRI 102-43]	Key Topics and Concerns Raised [GRI 102-44]	Results [GRI 102-44]
Shareholders	Representation	- AGMS/Annually  - EGMS/As needed	Annual Report to Shareholders	Approval of financial statement and Directors' activities in corporate management, both of which require GMS approval
Directors	Responsibility	Meetings of Directors are held according to business needs. Directors meet monthly to discuss business operations	Business operations	Approval of the Annual Report and other items that require decision from the Directors' Meetings
Customer (PLN)	Influence	Monthly meetings to coordinate operations and maintenance	- Generator maintenance schedule	Agreement of generator maintenance schedule
			- Generation Load	Agreement of monthly and weekly loading
	Dependence	Committee meeting between PLN, PGE, Star Energy (Joint Committee Meeting)	- Operational reliability	Maintenance of Grid and Plant operational reliability
Employees	Representation	Townhall meeting, gathering, outbond, training, workshop and seminar, mentoring & coaching. Meetings are held as needed	Development programs for strategic assets in employees' networks	Input to corporate plans on employee development
PGE	Representation	Meetings to discuss Budget and Expense Plans, Work Program & Budget (WP & B). Meetings are held every quarter	Presentation of realized work programs	Realization of programs in presentations and activity photos
Contractor/ Partners (Vendors/ Suppliers)	Dependence	Annual gatherings on Audit of OHS plans, every quarter/semester	Performance evaluation	Input to improve performance
Government/ Regional Government	Representation	Regular meetings with officials	Information and program sharing mechanism pursuant to main duties and functions ( <i>tupoksi</i> )	Regulatory compliance
		Participation in government programs that aligns with corporate plans		
		Transparent and comprehensive information sharing in regular meetings with multiple institutions and FGDs (Forum Group Discussion)	Receive and synergize aspirations, network building	Cooperate in research and socio-economic development programs to improve public welfare

Stakeholders [GRI 102-40]	Identification and Selection of Stakeholders [GRI 102-42]	Approach to Stakeholder Engagement - Engagement Frequency [GRI 102-43]	Key Topics and Concerns Raised [GRI 102-44]	Results [GRI 102-44]
Local Communities	Proximity	Execution meetings held every six months	Contributions to the public through community-based development programs (economic, educational, and health)	Carry out activities with the public (educational, economic, health, and environment)
		Community relations governance programs	Assistance in constructing public and basic social infrastructure	Planning, presenting, and describing relevant information transparently and carry out self managed work
		Stakeholder meetings held twice a year		
		Transparent and comprehensive information sharing in 4 monthly bulletins, regular meetings with multiple institutions, and FGDs		
		Forming an outreach team, consisting of community leaders, to mediate the company and the surrounding community		
NGOs	Representation	Participation in multi-stakeholder forums and direct dialogue initiatives in various conferences and meetings	Informing regulatory compliance	Presenting and describing relevant information transparently
		Transparent and comprehensive information sharing in meetings with stakeholders and multiple institutions and FGDs (Forum Group Discussion)		
		FGDs held as needed		





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# About This Report



SUSTAINABILITY REPORT (“REPORT”) OF STAR ENERGY GEOTHERMAL WAYANG WINDU LTD (“WAYANG WINDU”) 2018 IS THE NINTH REPORT SINCE ITS FIRST PUBLICATION IN 2009. THROUGH THIS REPORT, WE HOPE THAT THE STAKEHOLDERS COULD EVALUATE AND SUPPORT THE COMMITMENT OF SEGWWL IN ENSURING THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS, I.E. DEVELOPMENT IN ECONOMIC, SOCIAL, AND ENVIRONMENTAL SECTORS WHICH ARE BALANCED AND IN LINE WITH GLOBAL SUSTAINABLE DEVELOPMENT GOALS (SDGS) BY OPTIMIZING AVAILABLE RESOURCES USE”.

## REPORTING PERIOD AND CYCLE

This Sustainability Report is annually published and covers the period of 1 January to December 31, 2018. It contains sustainability-related information and data across three topics, namely economic, social, and environmental aspects. We also divide social aspect into 4 categories, namely: manpower, human rights, the community, and product stewardship. The previous year’s report was published in October 2018.

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

## REPORTING STANDARDS AND ASSURANCE [GRI 102-54, GRI 102-55]

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 135-139.

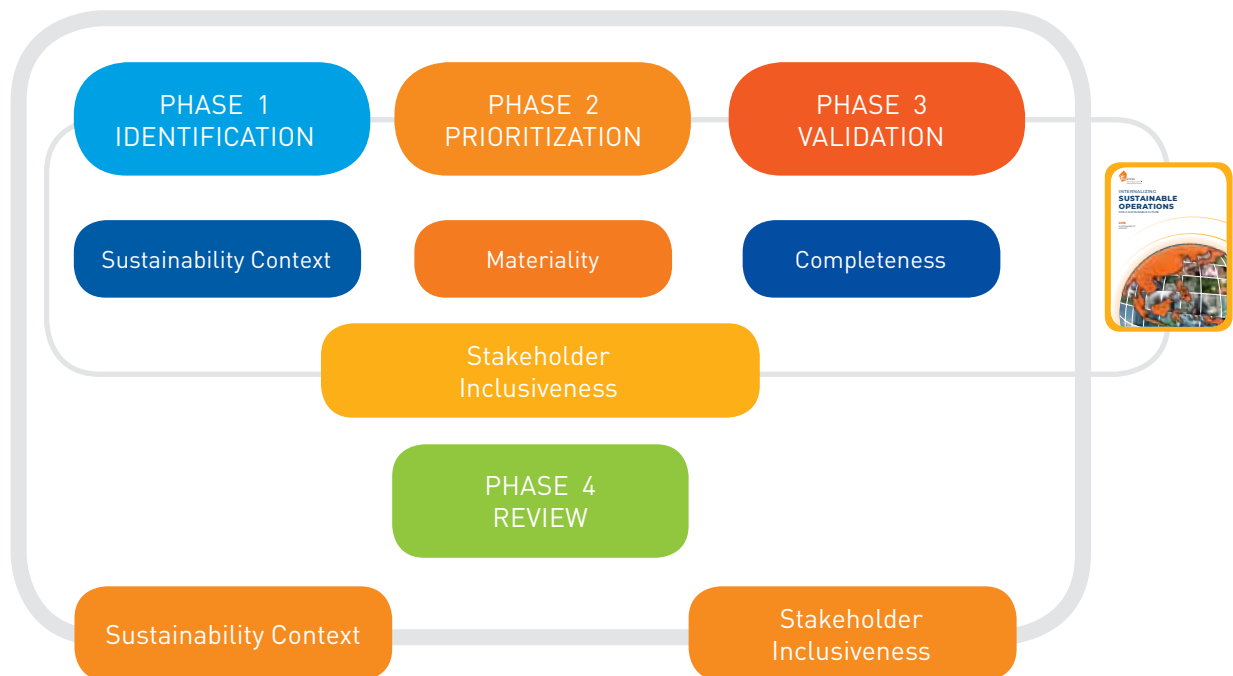
In this Report there were no restatements of previous years’ data, nor were there any significant changes to the reporting scope and boundary in the reporting period. Validation of all financial data took the form of audit conducted by a public accounting firm, while validation of other data was conducted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

No assurance process by an independent assurer has been performed on this 2018 Report. However, we have conducted the accordance check in cooperation with National Center for Sustainability Reporting (NCSR) 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 134. [GRI 102-56]

## 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 Standards, namely stakeholder inclusiveness, materiality, sustainability context, and completeness. See Flowchart for Determining Report Content, as follows.

Flowchart of Report Content Determination Process



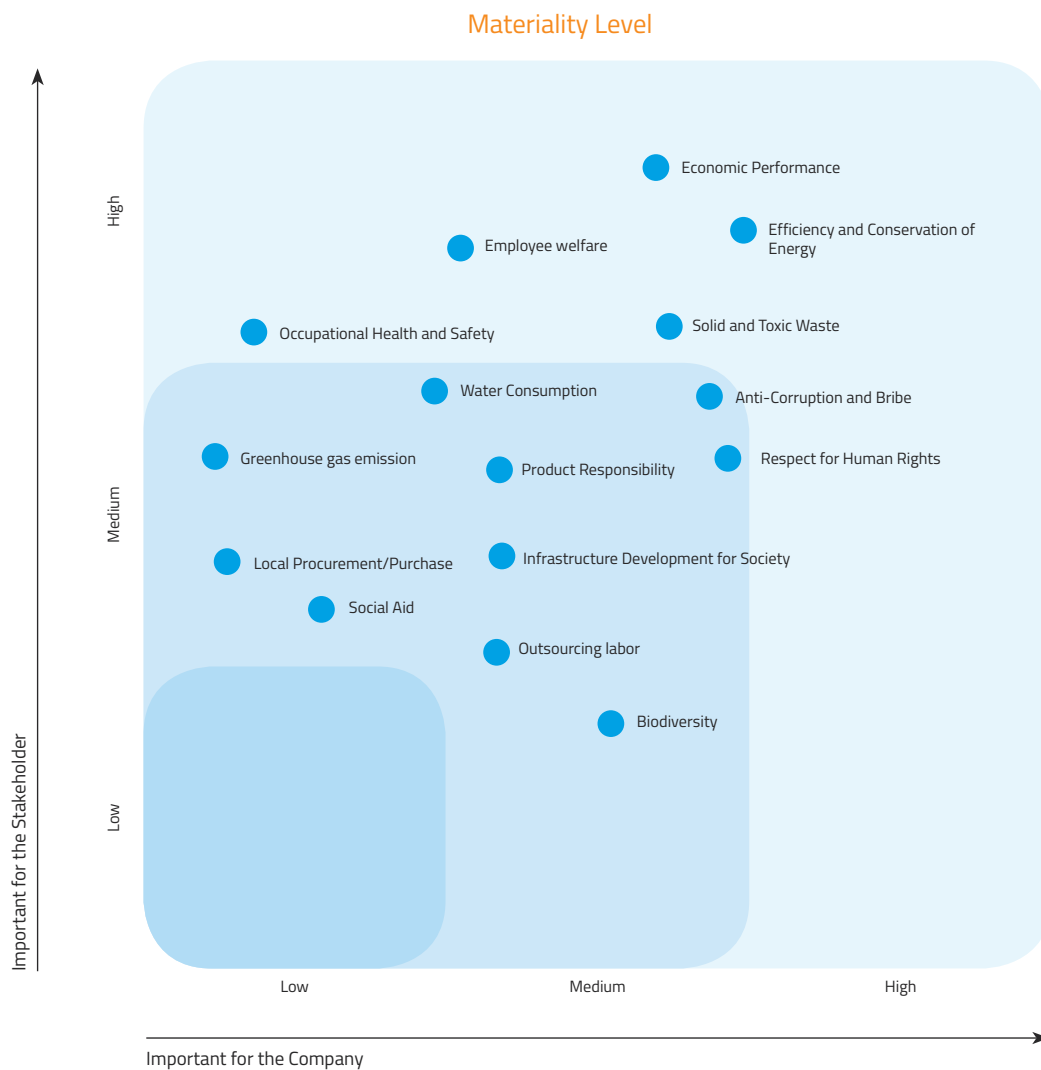
## DETERMINATION OF MATERIALITY

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

The Company requests 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.



## MATERIAL ASPECTS AND THEIR BOUNDARIES

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

No	Material Topic [GRI 102-47]	Why This Topic is Material [GRI 103-1]	Disclosure Index	Boundary	
				Internal to SEGWWL	External to SEGWWL
<b>ECONOMY</b>					
1	Economic Performance	Significant impact on stakeholders	201-2, 201-3	✓	
2	Market Presence	Significant impact on stakeholders	202-1	✓	
3	Indirect Economic Impact	Significant impact on stakeholders	203-1, 203-2	✓	
4	Anti-Corruption	Significant impact on development	205-3	✓	
<b>ENVIRONMENT</b>					
5	Material	Significant impact on sustainability	301-1	✓	
6	Energy	Significant impact on sustainability	302-3, 302-4	✓	
7	Water	Significant impact on sustainability	303-1, 303-3	✓	
8	Biodiversity	Significant impact on sustainability	304-3, 304-4	✓	
9	Emissions	Significant impact on sustainability	305-1, 305-2, 305-4, 305-5, 305-6	✓	
10	Effluents	Significant impact on sustainability	306-1, 306-2	✓	
11	Environmental Compliance	Significant impact on sustainability	307-1	✓	
12	Suppliers Environmental Assessment	Significant impact on reputation of the organization	308-1		✓
<b>SOCIAL</b>					
13	Employment	Compliance with applicable regulations	401-1, 401-2	✓	
14	Occupational Health & Safety	Significant impact on employees	403-1, 403-2, 403-4	✓	
15	Training & Education	Significant impact on employees	404-3	✓	
16	Non-discrimination	Significant impact on employees	406-1	✓	
17	Freedom of Association and Collective Bargaining	Significant impact on employees	407-1	✓	
18	Local Community	Significant impact on stakeholders	413-1	✓	

No	Material Topic [GRI 102-47]	Why This Topic is Material [GRI 103-1]	Disclosure Index	Boundary	
				Internal to SEGWWL	External to SEGWWL
19	Suppliers Social Assessment	Significant impact on reputation of the organization	414-1	✓	
20	Public Policy	Significant impact on stakeholders	415-1		✓
21	Customer Health & Safety	Significant impact on customers	416-2	✓	
22	Marketing & Labeling	Significant impact on customers	417-3	✓	
23	Socioeconomic Compliance	Significant impact on economic growth	419-1		✓

## 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:

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# Statement GRI Standards Core in Accordance Check



NATIONAL  
CENTER FOR  
SUSTAINABILITY  
REPORTING

## Statement GRI Standards in Accordance Check

The National Center for Sustainability Reporting (NCSR) has conducted a GRI Standards in Accordance Check on Star Energy Geothermal (Wayang Windu) Limited Sustainability Report 2018 (“Report”). The check communicates the extent to which the GRI Standards 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 been prepared in accordance with GRI Standards - Core option.

Jakarta, 23 August 2019

**National Center for Sustainability Reporting**

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



# GRI Standards Index - Core Option

[GRI 102-55]

GRI Standard	Disclosure		Page
	No	Title	
<b>GENERAL DISCLOSURE</b>			
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<b>Market Presence</b>			
GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 202: Market Presence 2016	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	115
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GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure Investments and Services Supported	72, 86
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<b>Anti-Corruption</b>			
GRI 103: Indirect Economic Impacts 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 406 Non-discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	112, 122
<b>Freedom of Association and Collective Bargaining</b>			
GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 407: Freedom of Association and Collective Bargaining 2016	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	114

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GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	95,121
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GRI 416: Customer Health and Safety 2016	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	97
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GRI 417: Marketing and Labeling 201	417-3	Incidents of non-compliance concerning marketing communications	95
<b>Socioeconomic Compliance</b>			
GRI 103: Management Approach 2016	103-1	Explanation of The Material Topic and its Boundary	132
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# SDG's Link in GRI Standards

SDG's	Business Theme	Relevant GRI Standard	Disclosure	Page
 <p><b>1 NO POVERTY</b></p>	Availability of products and services for low income groups	GRI 203: Indirect Economic Impacts	203-2	92
	Economic development in areas of high poverty	GRI 203: Indirect Economic Impacts	203-2	92
	Economic inclusion	GRI 401: Employment	401-2	112
		GRI 202: Market Presence	202-1	115
End poverty in all its forms everywhere				
 <p><b>2 ZERO HUNGER</b></p>	Economic development in areas of high poverty	GRI 203: Indirect Economic Impacts	203-2	92
	End hunger, achieve food security and improved nutrition and promote sustainable agriculture			
 <p><b>3 GOOD HEALTH AND WELL-BEING</b></p>	Air quality	GRI 305: Emissions	305-1, 305-2, 305-4, 305-5, 305-6	52-54
	Occupational health and safety	GRI 403: Occupational Health and Safety	403-1, 403-2, 403-4	103-104
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	Compliance with laws and regulations	GRI 308: Environmental Assessment of Suppliers	308-1	95
		GRI 416: Customer Health and Safety	416-2	97
Ensure healthy lives and promote wellbeing for all at all ages				
 <p><b>4 QUALITY EDUCATION</b></p>	Employee training and education	GRI 404: Training and Education	404-3	112
	Scholarship	GRI 203: Indirect Economic Impacts	203-1	72, 86
Ensure inclusive and quality education for all and promote lifelong learning				

SDG's	Business Theme	Relevant GRI Standard	Disclosure	Page
 <p><b>5 GENDER EQUALITY</b></p>	Equal remuneration for women and men	GRI 406: Non-discrimination	406-1	112, 122
		GRI 202: Market Presence	202-1	115
 <p><b>6 CLEAN WATER AND SANITATION</b></p>	Sustainable water withdrawals	GRI 303: Water	303-1, 303-3	54
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 <p><b>7 RENEWABLE ENERGY</b></p>	Energy efficiency	GRI 302: Energy	302-3, 302-4	48-51
	<p>Ensure access to affordable, reliable, sustainable and modern energy for all</p>			
 <p><b>8 DECENT WORK AND ECONOMIC GROWTH</b></p>	Changing productivity from various organizations, sectors, or general economy	GRI 203: Indirect Economic Impacts	203-2	92
	Diversity and equal opportunity	GRI 406: Non-discrimination	406-1	112, 122
	Economic performance	GRI 203: Indirect Economic Impacts	203-1, 203-2	72, 86, 92
	Freedom of association and collective agreement	GRI 102: General Disclosure	102-41	92
	Indirect impact on creating employment	GRI 203: Indirect Economic Impacts	203-2	32
	Work supported by the supply chain	GRI 102: General Disclosure 2016 – Supply Chain	102-9	114
	Employee relations	GRI 102: General Disclosure 2016 – Collective bargaining agreement	102-41	103-104
	Occupational health and safety	GRI 403: Occupational Health and Safety	403-1, 403-2, 403-4	116
	Youth employment	GRI 102: General Disclosure – Information on Employees	102-8	95
	Compliance to regulations	GRI 417: Marketing Labeling	417-3	
<p>Promote inclusive and sustainable economic growth, employment and decent work for all</p>				

SDG's	Business Theme	Relevant GRI Standard	Disclosure	Page
<b>9 INNOVATION AND INFRASTRUCTURE</b> 	Infrastructure investments	GRI 203: Indirect Economic Impacts	203-1	72, 86
	Economic development in areas of high poverty	GRI 203: Indirect Economic Impacts	203-2	92
Build resilient infrastructure, promote sustainable industrialization and foster innovation				
<b>10 REDUCED INEQUALITIES</b> 	Economic development in areas of high poverty	GRI 203: Indirect Economic Impacts	203-2	92
Reduce inequality within and among countries				
<b>11 SUSTAINABLE CITIES AND COMMUNITIES</b> 	Infrastructure investments	GRI 203: Indirect Economic Impacts	203-2	92
Make cities inclusive, safe, resilient and sustainable				
<b>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b> 	Air quality	GRI 305: Emissions	305-1, 305-2, 305-4, 305-5, 305-6	52-54
	Materiality	GRI 301: Materiality	301-1	48
	Product and service information and labelling	GRI 417: Marketing Labeling	417-3	95
	Spills	GRI 306: Effluents And Waste	306-1, 306-2	55, 57
Ensure sustainable consumption and production patterns				



SDG's	Business Theme	Relevant GRI Standard	Disclosure	Page
 <p>Take urgent action to combat climate change and its impacts</p>	Energy efficiency	GRI 302: Energy	302-3, 302-4	48-51
	Emissions	GRI 305: Emissions	305-1, 305-2, 305-4, 305-5, 305-6	52-54
 <p>Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss</p>	Biodiversity Conservation	GRI 304: Biodiversity	304-3, 304-4	39-42
	Compliance with laws and regulations	GRI 307: Environmental Compliance	307-1	37, 38, 58
 <p>Promote just, peaceful and inclusive societies</p>	Anti-corruption	GRI 205: Anti-corruption	205-3	121
	Compliance with laws and regulations	GRI 102: General Disclosure – Values, Principles, Standards dan Behavioral Norms	102-16	25, 121
	Ethical and lawful behavior	GRI 102: General Disclosure – Values, Principles, Standards and Behavioral Norms	102-16	25, 121
	Inclusive decision-making	GRI 102: General Disclosure – Governance, stakeholder engagement, , collective bargaining agreement	102-18, 102-40, 102-41, 102-42, 102-43, 102-44	114, 120, 123, 125
 <p>Revitalize the global partnership for sustainable development</p>	External initiatives	GRI 102: General Disclosure – external initiatives	102-12	47, 102, 120, 123

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**2018**  
SUSTAINABILITY  
REPORT



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