



**INTEGRATED
UTILITIES AND POWER**
SERVICE PROVIDERS

**SUSTAINABILITY
REPORT 2019**



CONTENTS



General Information

- Message from CEO • 2
- Membership • 4
- About this report • 5
- WHAUP Business • 8
- Stakeholders • 19
- Materiality assessment • 23



Governance and Economy

- Codes of Business Conduct • 28
- Risk and Crisis Management • 32
- Supply Chain Management • 36
- Innovation Management • 39
- Customer Relationship Management • 45

Society



- Occupational Health and Safety • 50
- Human Resource Management • 56
- Community Development • 62

Environment



- Environmental and Impact Management • 71
- Water Management • 78
- Climate Change and Energy Management • 82

- WHAUP Performance data • 87
- GRI Content Index • 94



GENERAL INFORMATION

- Message from CEO
- Membership
- About this report
- About WHAUP
- Stakeholders
- Materiality assessment

WHA
Utilities & Power

5,000 m³

Message from CEO



“

“Sustainable development” has been taking huge role in the global development trend and Thailand has adopted such concept in the national development plan in order to balance the achievement in terms of human resource, society, economic, and the environment.

”

From the inception, WHAUP has embedded environmental, social, and governance aspects as part of our business practice philosophy. The year 2019 is an important year for the Company not only for the continued success of business, but also a year to mark important step to be ready for future challenges and opportunities to grow as part of the country's effort in achieving Sustainable Development Goals. As part of WHA Group, we also shared efforts with other business hubs within the Group, being Logistics, Industrial Development, and Digital Platform, in developing our business sustainably.

Part of the previous year achievement was the partnership with Glow Energy Public Company Limited and Suez Group to develop an industrial waste to energy power plant with the capacity of 8.63 megawatts. The initiative supports non-hazardous industrial waste disposal up to 400 tons per day or 100,000 tons per year by converting waste to fuel the power generation in the environmental-friendly manner.

As the core of WHAUP businesses are utilities and power, we have focused to develop environmental friendly projects on both segments. For power segment, the Company promotes the use of solar power, being clean alternative energy source. Our short-term goal is to further develop solar rooftop capacity to 50 megawatts, from current capacity of 35 megawatts at the end of 2019, and to achieve 100 megawatts within 2022. For utilities segment, we continue the success of our 'Clean Water for Planet'

program; the water treatment project using constructed wetland principle to treat wastewater. Also, looking forward into 2020, WHAUP continued to expand our reclaimed wastewater plant, treating wastewater to be industrial-grade water, in WHA Eastern Industrial Estate (Map Ta Phut) and Eastern Seaboard Industrial Estate (Rayong). This expansion is focus to both reduce usage of natural water source and create more sustainable water supply, which will benefit both our customers and society as a whole.

The Company's commitment to laws and regulation compliance and ethical values, together with extensive and consistent consideration of its responsibility towards stakeholders contributes to the Company's success and reputation. In 2019, as a key milestone, WHAUP has become registered member of the Private Sector Collective Action Against Corruption (CAC) of Thailand. The Company has fully committed to ensure our continued good corporate governance practices. We prioritize human resource development as the heart of the achievement and therefore focuses on developing quality employee who are able to adapt to changing trend of 21st century which will benefit the employee themselves, the organization, and the country.



Dr. Nipphon Bundechanan
Chief Executive Officer

Membership



WHAUP commits to conduct its business in a sustainable way with focuses on business integrity and innovations. The Company coordinates with and supports various organizations to strengthen its partnership network which brings opportunities for growth.

One of the key success that demonstrate the Company's commitment to business integrity and transparent was to become certified member of Thailand's Private Sector Collective Action Coalition against Corruption (CAC) in November 2019.

In addition, WHAUP also contributes and collaborates with following associations:

- Thai Photovoltaic Industries Association : TPVA Thailand
- Water and Environment Institute for Sustainability : WEIS
- The Federation of Thai Industries
- Thai Industrial Estate and Strategic Partner Association



About This Report

WHA Utilities and Power (WHAUP) prepares sustainability report annually to disclose the Company's management approach and performance of the material topics in terms of economic, governance, social, and the environment aspects that are significant to the Company's operations and important to stakeholders. In addition, the report aims to inform WHAUP's progress and performance which support the United Nations Sustainable Development Goals (SDGs).

This report is WHAUP's first sustainability report, which has been prepared in accordance with the Global Reporting Initiatives (GRI) Standards for Core option. The reporting boundary of this report covers all of WHAUP's business operations and its subsidiaries that are located in Thailand, and that the Company holds greater than 50 percent of the total share and has management control. The content within

this report covers the period from January 1st to December 31st, 2019.

This report did not receive third party verification, but the contents and data in this report were reviewed and approved by management level of related division to ensure accuracy of reporting content and data.

For more information, please contact:

WHA Utilities & Power Corporate Secretary

WHA Utilities & Power Public Company Limited (WHAUP)

9/241 - 242, 24th Floor, UM Tower, Ramkhamhaeng Road, Suanlaung district, Sunalaung Sub-district

Bangkok 10250, Thailand

Tel: (662) 719-9559

E-mail: ESG@wha-up.com



About WHAUP

WHA Utilities and Power Public Company Limited (WHAUP), previously named Hemaraj Clean Water Company Limited, was established in June 30, 2008. The Company's core businesses are utility business and power business and mainly serves the manufacturers in WHA industrial estates. In April 2017, WHA Utilities and Power Public Company Limited was listed on the Stock Exchange of Thailand.

Today, WHAUP is recognized as the leader of Thailand utilities and power services for the industrial estate. The Company continuously improves and expands both utility business and power business to be the clients' ultimate solution partner in utilities and power with environmental care.



Vision

To be Asia's leader in utilities and power businesses providing total solutions to partners with good corporate governance as well as environmentally and socially friendly operations.

Mission

- To develop world class utilities and power solutions fitting customers' needs.
- To vertically integrate solutions in utilities and power businesses and expand other market segment to increase products and services in Thailand and other Southeast Asia Countries (CLMV Countries).
- To continuously develop human resources competencies.
- To nurture an innovative culture in the organization.
- To add value to communities and the environment with good corporate governance and sustainable development strategies.

Culture and Values



Advance

To be initiative and proactively work to inspire, create, or adjust practical concept, means, or be innovative in order to fulfill customers' requirement and organizational goal.



Champion

To achieve success, which results in business excellence.



Resourceful

To build relationship with customers as a consultant and provide professional advice.



Partnership

To reinforce lasting relationship and build trust as a business alliance with customers and partners, and reinforce internal favorable relationship in order to attain the organizational goal together.



Integrity

To cultivate and develop trust and confidence from customers with transparent working culture, adhere to promise, sincerity, diligent, ethical and socially responsible.

WHAUP Business

WHA Utilities and Power's core business relates to the: (i) Utility Business, i.e. procurement and distribution of raw water, production and distribution of industrial water and providing wastewater treatment services to operators in industrial estates and industrial zones; and (ii) Power Business through investment in power generation business, both domestically and abroad.

In addition to the exclusivity rights granted by the WHAID Group's to operate water business, i.e. business relating to procurement, logistic, production and distribution of raw water, process water and wastewater treatment business in its industrial estates in Thailand, the Company has also obtained the right of first refusal to invest in the natural gas distribution business and waste to energy business in those industrial estates and industrial lands in Thailand for 50 years, starting from 30 March 2016 (as stated in the Strategic Partnership Agreement).



MORE THAN
110 MILLION M³
OF UTILITIES SERVICES



USE OF TECHNOLOGY
AND INNOVATION TO
ADD VALUE TO
THE PRODUCT E.G.
DEMINERALIZED WATER

INCREASED ELECTRICITY
PRODUCTION TO



559
MW



COMMERCIAL
OPERATION DATE
(COD) OF CHONBURI
CLEAN ENERGY
(CCE) THROUGH
PARTNERSHIP

Utilities Business

The Company and its subsidiaries engage in the utility business by providing utility services mainly to operators in industrial estates and industrial lands. Utilities services provided are fundamental services for industrial estates and industrial zones with the aggregated industrial water production capacity of 294,576 m³ per day and wastewater treatment capacity of 120,456 m³ per day in 2019. The nature of the Company's products and services is detailed as follows:

1. Procurement and Distribution of Raw Water

WHAUP procures and distributes raw water to industrial operators in WHA Industrial Development Public Company Limited ("WHAID") industrial areas. The Company offers raw water as an alternative of water consumption for industrial operators. The Company's core customers are operators in steel industry, IPPs and SPPs.

2. Production and Distribution of Industrial Water

WHAUP produces and distributes industrial water to industrial operations. The product can be divided into three categories:

- (1) **Process Water:** Process water is industrial water that has undergone the processes of sedimentation, filtration and chlorination for disinfection. The final product is used in the production process in industrial plants in general. WHAUP's core customers include the automotive industry (e.g. automotive assembly plants and auto part manufacturing plants), food industry and electronics industry.
- (2) **Clarified Water:** Clarified water is produced through the processes of sedimentation, filtration and chlorination. Lower quantity and concentration of chlorine is used in chlorination process for clarified water, compared to process water, so that a very small amount of chlorine is left in the clarified water product when it is distributed to customers. This product is in great demand for customers in heavy industries such as petrochemical, given that chlorine may cause corrosion in machinery and equipment used in those industries.
- (3) **Demineralized water** is reclaimed water that has been purified. The water is used in some industry such as power plant, petrochemical, electronics, etc. WHAUP has started to provide the demineralized water in 2019.

3. Waste Water Treatment

WHAUP provides wastewater treatment services for WHA industrial estates of which wastewater from the manufacturers were gather at the central wastewater pond and treated to ensure the quality of the water meet the standards imposed by the Ministry of Industry before being discharged into natural water sources or recycled into the water production process.

Power Business

WHAUP conducts power business both domestically and abroad. The company has 30 commercially operating power plants with aggregate installed power generating capacity of 2,588 MW, or equal to a capacity in proportion to equity of 559 MW. The Company also has 2 commercially operating natural gas distribution and power plants which have total capacity of 3,000,000 million BTU per year or equal to a capacity in proportion to equity of 1,050,000 million BTU per year. In addition, there are power plant projects that WHAUP has solely invested in that are under construction. The power plants have an aggregate contracted power generating capacity of 24.4 MW.

Commercially Operating Power Plants in which WHAUP Invests in

1. Gheco-I Company Limited (Gheco-I)

Gheco-I Power Plant is a coal-fired power plant in Map Ta Phut Industrial Estate, Rayong province. The power plant has an installed power generating capacity of 660MW under an IPP power purchase agreement with EGAT. Total electricity generated from this power plant is sold to EGAT for 25 years starting from the COD in August 2012. The Company holds equity in Gheco-I Power Plant through WHA Energy 2 Company Limited with 35 percent of total issued and paid-up shares in Gheco-I Power Plant. The remaining 65 percent of its total capital is held by the Glow Group.

2. Glow IPP Company Limited (Glow IPP)

Glow IPP Power Plant is a gas-fired power plant in WHA CIE 1, Chonburi province. The power plant has an installed power generating capacity of 713MW under an IPP power purchase agreement with EGAT. Total electricity generate from this power plant is sold to EGAT for 25 years starting from the COD in January 2003. WHA Energy 2 Company Limited holds 5 percent of total issued and paid-up shares in Glow IPP. The remaining 95 percent of total capital in Glow IPP is held by the Glow Group.

3. Houay Ho Power Company Limited (HHPC)

HHPC, a company registered in Lao People's Democratic Republic, was established with the objectives to own and operate a hydro power plant, Houay Ho, in Attapeu province in the southern part of Laos. Houay Ho Power Plant has an installed power generating capacity of 152 MW. HHPC has obtained a 30-year concession on a build-operate transfer basis from the Government of Laos. This power plant became commercially operating in September 1999 with an installed power generating capacity to sell 126 MW of electricity to EGAT and 2 MW to Electricite du Laos (EDL) for 30 years from the commercial operation date. However, the amount of electricity to be sold to EGAT in each year will be based on the quantity of water storage of the power plant. A monthly report on the estimated power generating quantity will be provided to EGAT.

The Company directly holds 51 percent of the total issued and paid-up shares in Houay Ho Thai Company Limited (HHTC), with the remaining shares of HHTC being directly held by the Glow Group. HHTC directly holds 25 percent of the total issued and paid-up shares in HHPC. Effectively, the Company owns 12.75 percent shareholding in HHPC, while the Glow Group effectively owns (both directly and indirectly) 67.25 percent shareholding in HHPC, and EDL Generation Public Company Limited directly owns 20 percent shareholding in HHPC.

4. Gulf JP NLL Company Limited (Gulf JP NLL)

Gulf JP NLL owns and operates SPP power plant in WHA RIL, Rayong province. The SPP power plant is a gas-fired power plant with installed power generating capacity of 123MW. It sells 90MW of electricity to EGAT under an SPP power purchase agreement on a firm commitment basis, which has a term of 25 years from the COD in May 2013.

This power plant also has an agreement to sell steam and chilled water to industrial customers in WHA RIL.

The Company holds equity in Gulf JP NLL power plant project through WHA Energy 2 Company Limited with total 25.01 percent of the total issued and paid-up shares in Gulf JP NLL. The remaining 74.99 percent of its total capital is held by the Gulf Group.

5. Gulf Solar power plants

Gulf Solar Company Limited (Gulf Solar) owns and operates four solar rooftop VSPP power plants with an installed power generating capacity of 0.6 MW of which all generated power is distributed to PEA and the Metropolitan Electricity Authority (MEA). The four power plants consist of the following companies:

- (1) Gulf Solar KKS Company Limited in WHA LP 1, which has a installed power generating capacity of 0.25 MW and became commercially operational in December 2014;



- (2) Gulf Solar BV Company Limited in WHA CIE 1, which has a installed power generating capacity of 0.13 MW and became commercially operational in June 2014;
- (3) Gulf Solar TS1 Company Limited in WHA ESIE 1, which has a installed power generating capacity of 0.13 MW and became commercially operational in August 2014; and
- (4) Gulf Solar TS2 Company Limited in ESIE, which has a installed power generating capacity of 0.09MW and became commercially operational in January 2015.

WHA Solar Company Limited holds 25.01 percent of the total issued and paid-up shares in Gulf Solar. The remaining 74.99 percent of its total capital is held by the Gulf Group.

6. WHA Gunkul solar power plants

The WHA Gunkul Group owns and operates four solar rooftop VSPP power plants which have total installed power generating capacity of 3.3 MW, divided into 2.3 MW sold to PEA and 1.0 MW to MEA. The four power plants consist of the following companies:

- (1) WHA Gunkul Green Solar Roof 1 Company Limited in WHA Mega Logistics Centre, Bangna-Trad Road KM.18, Samutprakan province, which has a installed power generating capacity of 0.64 MW and became commercially operational in April 2014.
- (2) WHA Gunkul Green Solar Roof 3 Company Limited in WHA Mega Logistics Centre, Bangna-Trad Road KM.18, Samutprakan province, which has a installed power generating capacity of 0.83 MW and became commercially operational in April 2014;
- (3) WHA Gunkul Green Solar Roof 6 Company Limited in WHA Mega Logistics Centre, Bangna-Trad Road KM.18, Samutprakan province, which has a installed power generating capacity of 0.83 MW and became commercially operational in April 2014;
- (4) WHA Gunkul Green Solar Roof 17 Company Limited in WHA Mega Logistics Centre, Wangnoi 61, Phra Nakhon Sri Ayutthaya province, which has a installed power generating capacity of 1.0 MW and became commercially operational in July 2014;

WHA Solar Company Limited holds 74.99 percent of total issued and paid-up shares in each of the above companies. The remaining 25.01 percent of total capital in those companies is held by the Gunkul Group.

7. B.Grimm Power (WHA) 1 Company Limited (BPWHA-1)

BPWHA-1 owns and operates BPWHA-1 Power Plant in WHA CIE 1, Chonburi province. BPWHA-1 Power Plant is a gas-fired SPP power plant with total installed power generating capacity of 130 MW. This power plant sells 90MW of electricity to EGAT under a power purchase agreement on a firm commitment basis, which has a term of 25 years from the COD in November 2016. It also has an agreement to sell electricity to industrial customers in WHA CIE 1.

WHA Energy Company Limited holds 25.01 percent of total issued and paid-up shares in BPWHA-1. The remaining 74.99 percent of its total capital is held by the B.Grimm Power Group.

8. Gas-fired power plants project a joint venture with Gulf MP Company Limited

The WHAUP Group and Gulf MP Company Limited jointly own 4 SPP gas-fired power plants with a firm basis power purchase agreement, consisting of the following companies:

- (1) Gulf VTP Company Limited (Gulf VTP), which operates Gulf VTP Power Plant in ESIE, Pluakdaeng sub-district, Rayong province having an installed power generating capacity of 137 MW and an installed steam generating capacity of 20 Ton/hour. This power plant became commercially operational in May 2017.
- (2) Gulf TS1 Company Limited (Gulf TS1), which operates Gulf TS1 Power Plant in ESIE, Pluakdaeng sub-district, Rayong province having an installed power generating capacity of 134 MW and an installed steam generating capacity of 30 Ton/hour. This power plant became commercially operational in July 2017.
- (3) Gulf TS2 Company Limited (Gulf TS2), which operates Gulf TS2 Power Plant in ESIE, Pluakdaeng sub-district, Rayong province having an installed power generating capacity of 134 MW and an installed steam generating capacity of 30 Ton/hour. This power plant became commercially operational in September 2017.

(4) Gulf TS3 Company Limited (Gulf TS3), which operates Gulf TS3 Power Plant in WHA ESIE 1, Pluakdaeng sub-district, Rayong province having an installed power generating capacity of 130MW and an installed steam generating capacity of 25 Ton/hour. This power plant became commercially operational in November 2017.

(5) Gulf TS4 Company Limited (Gulf TS4), which operates Gulf TS4 Power Plant in WHA ESIE 1, Pluakdaeng sub-district, Rayong province having an installed power generating capacity of 130 MW and an installed steam generating capacity of 25 Ton/hour. This power plant became commercially operational in January 2018.

(6) Gulf NLL 2 Company Limited (Gulf NLL2), which operates Gulf NLL Power Plant in WHA RIL, Ban Khai District, Rayong Province having an installed power generating capacity of 127 MW and an installed steam generating capacity of 10 Ton/hour. This power plant became commercially operational in January 2019.

WHA Energy Company Limited holds 25.01 percent of the total issued and paid-up shares in each of the above power plant companies. The remaining 74.99 percent of their total capital is held by Gulf MP Company Limited.

9. Industrial waste energy projects a joint venture with Glow Energy Public Company Limited and Suez (Asia) Limited

Chonburi Clean Energy Plant is an industrial waste to energy power plant in WHA CIE 1, Chonburi province. This power plant has an installed power generating capacity of 8.6 MW. The power plant started the commercial operations in November 2019.

Chonburi Clean Energy Company Limited is a subsidiary of Eastern Seaboard Clean Energy Company Limited, a joint venture between Glow IPP 3 Company Limited (a subsidiary of Global Power Synergy PCL.) with WHA Energy Company Limited (a subsidiary of WHA Utilities and Power Plc.) and SUEZ Co.,Ltd for development of industrial waste energy projects. Each party owns an equal proportion of shares.

10. Natural Gas Distribution, a joint venture with Gulf Energy Development Plc and MITG (Thailand) Co., Ltd.

WHA Eastern Seaboard NGD 2 (WHANGD2) which operates and distributes natural gas to industrial customers in WHA Eastern Seaboard Industrial Estate 2 and WHA Eastern Seaboard NGD 4 (WHANGD4) which operates and distributes natural gas to industrial customers in WHA Eastern Seaboard Industrial Estate 4 ,which has started the commercial operation on June 2019.

11. Solar Rooftop Power Plant Project



The Company has operated Solar Rooftop project to distribute power to industrial factories and warehouses located both in industrial areas and warehouses of the WHA Group and external areas, which has started commercial power generation in a total volume of 6.4 MW.

Power Plants that are Under Construction

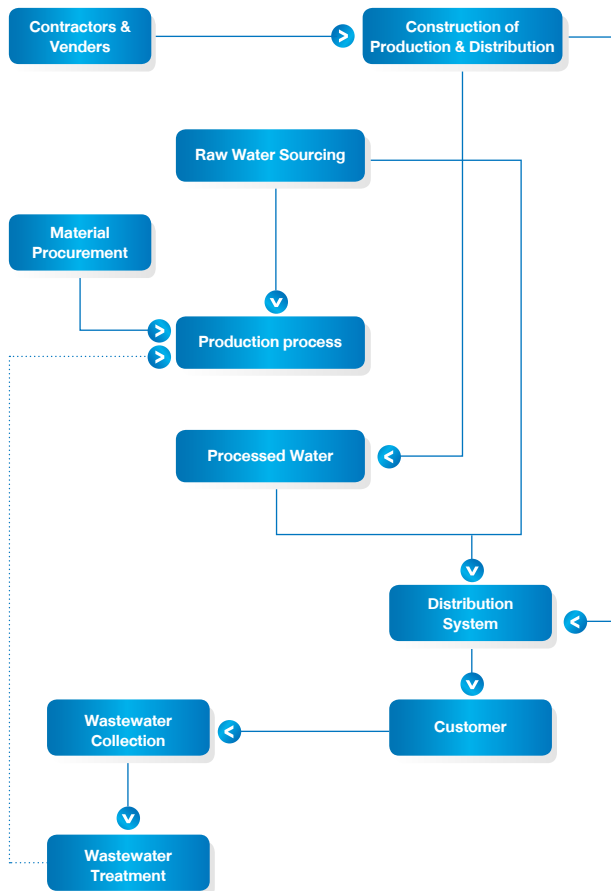
Solar Rooftop power plants

WHAUP develops solar rooftop power plants to sells electricity to industrial customers both inside the WHAID's industrial area and outside which are under construction having total installed power generating capacity of 24.4 MW.

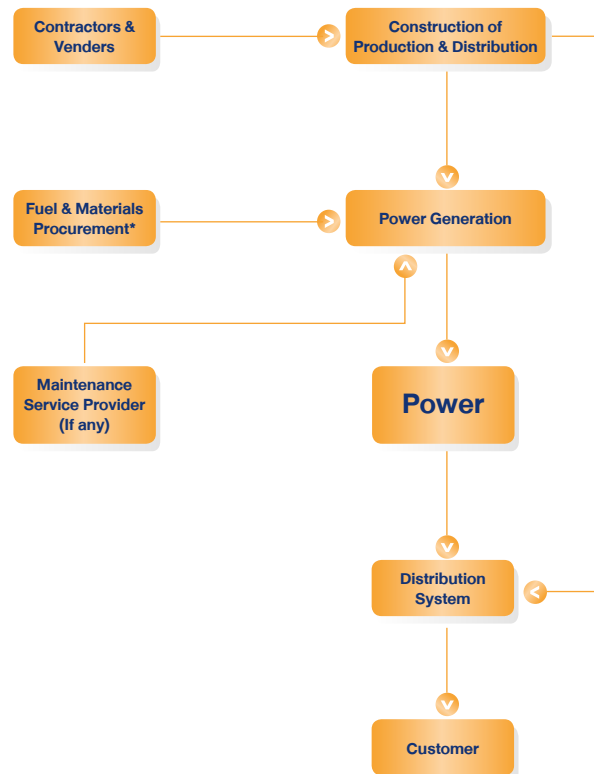
Value Chain

Business	Upstream	Operations	Downstream
Utilities 	<ul style="list-style-type: none"> Water procurement 	<ul style="list-style-type: none"> Water production and distribution Wastewater treatment 	<ul style="list-style-type: none"> Maintenance Customer service
Power 	<ul style="list-style-type: none"> Fuel and solar panel procurement 	<ul style="list-style-type: none"> Power production Solar rooftop installation 	

UTILITIES



POWER



**Not applicable to Solar Power*

Location

WHA Utilities & Power Public Company Limited (WHAUP)

9/241-242 24th Floor, UM Tower Ramkhamhaeng Road, Suanlaung district, Suanlaung Sub-district Bangkok 10250, Thailand

Tel: (662) 719-9559

Utilities Business

WHAUP and its subsidiaries have 17 industrial water production plants and 13 wastewater treatment facilities located in ten industrial estates and industrial lands operated by the WHAID Group.

Industrial Estates and Industrial Land	Location
WHA Eastern Industrial Estate (WHA EIE)	Map Ta Phut, Rayong
Eastern Seaboard Industrial Estate (ESIE)	Pluakdaeng, Rayong
WHA Eastern Seaboard Industrial Estate 1 (WHA ESIE 1)	Pluakdaeng, Rayong
WHA Chonburi Industrial Estate 1 (WHA CIE 1)	Sriracha, Chonburi
WHA Chonburi Industrial Estate 2 (WHA CIE 2)	Sriracha, Chonburi
WHA Saraburi Industrial Land (WHA SIL)	Nongkae, Saraburi
WHA Rayong Industrial Land (WHA RIL)	Bankhai, Rayong
WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE 2)	Pluakdaeng, Rayong
WHA Eastern Seaboard Industrial Estate 4 (WHA ESIE 4)	Pluakdaeng, Rayong
WHA Eastern Seaboard Industrial Estate 3 (WHA ESIE 3)	Banbung/NongYai, Rayong

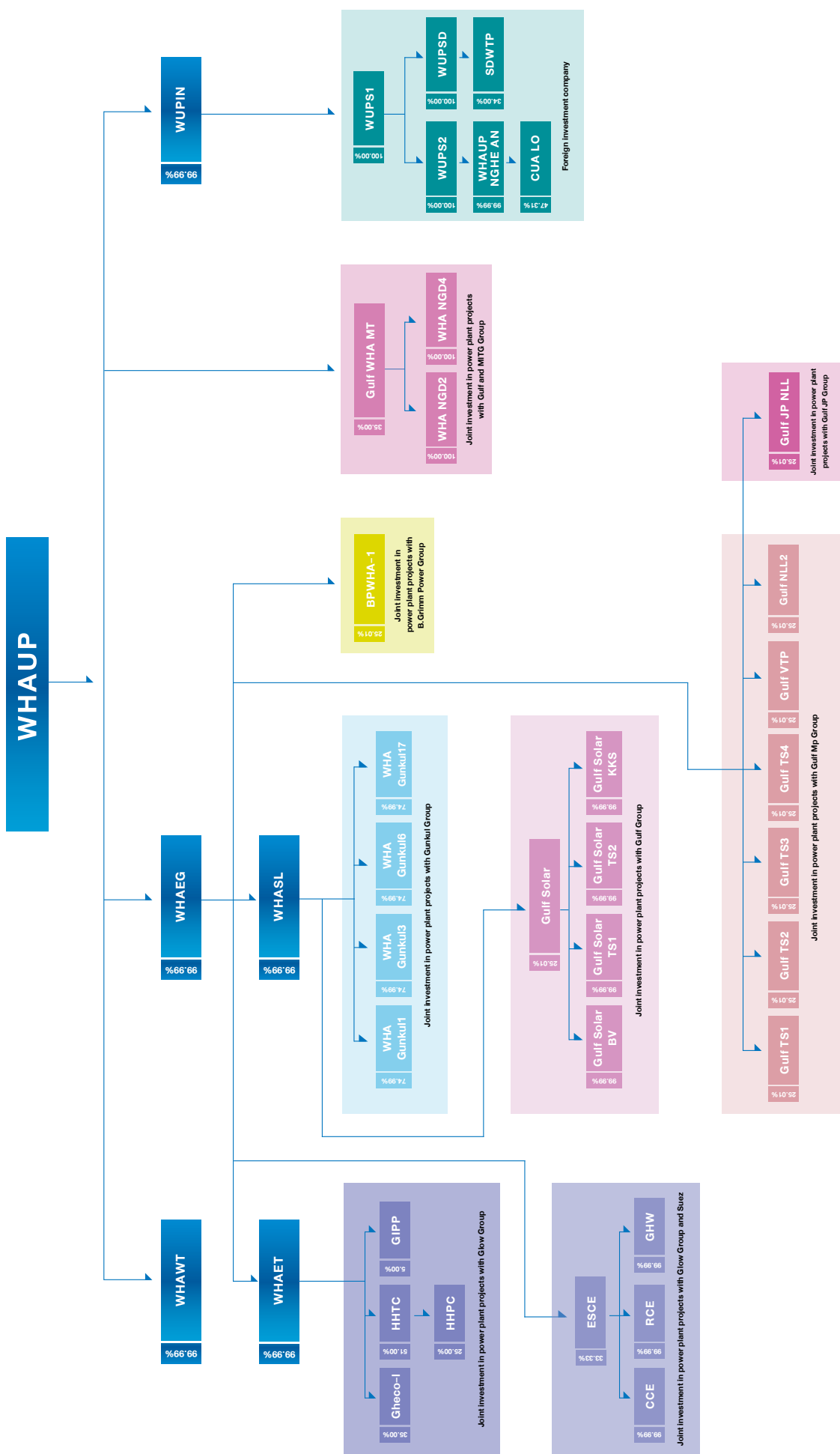
Power Business

WHAUP conducts power business by holding equity in other power generating and distribution companies, both domestically and abroad. The Company invested in 30 commercially operating power plants and 2 commercially operating natural gas distribution projects.

Power Plant	Location	Type of Power	Plant Category	Equity Holding (%)
Commercially operating power plants that WHAUP has investment				
Gheco-I	Map Ta Phut Industrial Estate	Coal	IPP	35.00%
Glow IPP	WHA CIE 1	Gas-fired cogeneration	IPP	5.00%
Houay Ho Power	Lao People's Democratic Republic	Hydro power	IPP	12.75%
Gulf JP NLL	WHA RIL	Gas-fired cogeneration	SPP	25.01%
Gulf Solar KKS	WHA PL1	Solar power	VSPP	25.01%
Gulf Solar BV	WHA CIE	Solar power	VSPP	25.01%

Power Plant	Location	Type of Power	Plant Category	Equity Holding (%)
Gulf Solar TS1	WHA ESIE 1	Solar power	VSPP	25.01%
Gulf Solar TS2	ESIE	Solar power	VSPP	25.01%
WHA Gunkul Green Solar Roof 1	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%
WHA Gunkul Green Solar Roof 3	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%
WHA Gunkul Green Solar Roof 6	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%
WHA Gunkul Green Solar Roof 17	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%
BPWHA-1	WHA CIE 1	Gas-fired cogeneration	SPP	25.01%
Gulf VTP	ESIE	Gas-fired cogeneration	SPP	25.01%
Gulf TS1	ESIE	Gas-fired cogeneration	SPP	25.01%
Gulf TS2	ESIE	Gas-fired cogeneration	SPP	25.01%
Gulf TS3	ESIE	Gas-fired cogeneration	SPP	25.01%
Gulf TS4	ESIE	Gas-fired cogeneration	SPP	25.01%
Gulf NLL 2	WHA RIL	Gas-fired cogeneration	SPP	25.01%
CCE	WHA CIE	Waste-to-Energy	VSPP	33.33%
Solar power plants	-	Solar Power	Private PPA	100%
Power plants under construction that WHAUP has investment				
Solar power plants	-	Solar Power	Private PPA	100%

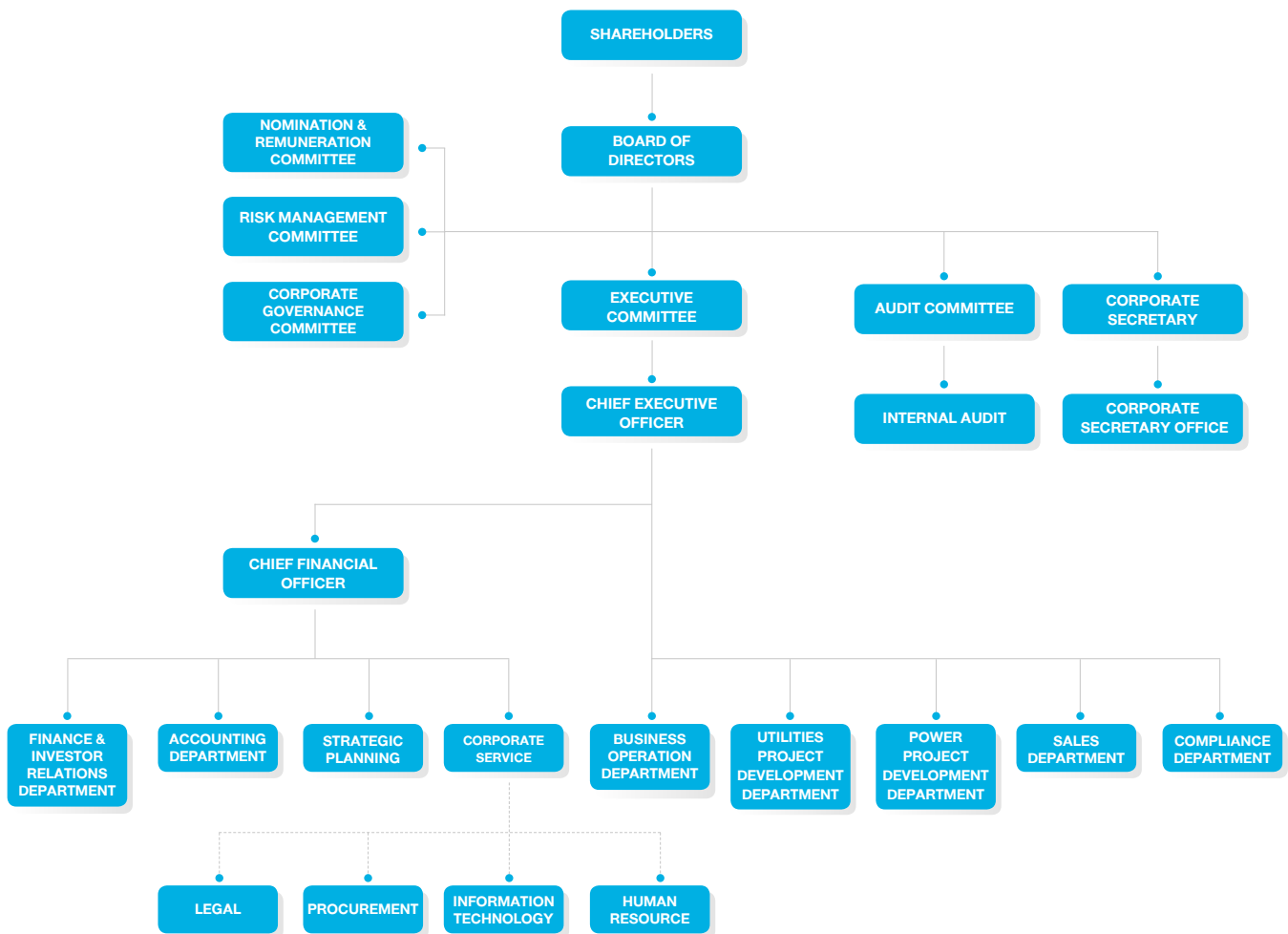
Shareholding Structure



Organization Structure

WHAUP's corporate governance structure consists of the Board of Directors and 5 subcommittees which are:

1. Executive Management Committee
2. Audit Committee
3. Risk Management Committee
4. Nomination and Remuneration Committee
5. Corporate Governance Committee



Note : For the functions under the corporation service e.g., Legal, Procurement, IT and HR the Company uses outsource service.

Stakeholders

WHAUP recognizes the importance of all groups of stakeholders, which may have direct or indirect influence on the Company's business operations. The Company regularly engages with the stakeholders in order to hear and understand their concerns and expectations. In order to effectively engage with the stakeholders, WHAUP identifies the related stakeholders in its value chain considering the impact and influence of the stakeholders on the Company activities and vice versa. WHAUP has identified seven groups of key stakeholders, which are employee, shareholder, customer, supplier and creditor, competitor, government and regulator, and community, that the top three of the stakeholders by ranking of WHAUP are 1) customer 2) employee and 3) community.



Stakeholder Engagement



Employee

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Various all-time communication channels i.e. e-mail, supervisor, intranet, etc. Annual CEO townhall Quarterly Executive Sharing Annual employee satisfaction and engagement survey Suggestion box Whistle blowing channel 	<ul style="list-style-type: none"> WHAUP Outlook 	<ul style="list-style-type: none"> Update the business performance and business outlook
	<ul style="list-style-type: none"> News update and knowledge sharing 	<ul style="list-style-type: none"> Communicate and share updated situation and the executive knowledge
	<ul style="list-style-type: none"> Training and career development program 	<ul style="list-style-type: none"> Develop and provide suitable training programs
	<ul style="list-style-type: none"> Work environment 	<ul style="list-style-type: none"> Communicate on corporate values and strategy
	<ul style="list-style-type: none"> Compensation, welfare and benefits 	<ul style="list-style-type: none"> Regularly review and improve employee compensation and benefits
	<ul style="list-style-type: none"> Management of occupational health and safety 	<ul style="list-style-type: none"> Promote good occupational health and safety culture



Shareholder / Investor

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Annual General Meeting Annual report Roadshow Analyst meeting Outlook meeting Investor site visit Opportunity Day Whistle blowing channel Various all time communication channels i.e. telephone, e-mail, website, etc. 	<ul style="list-style-type: none"> Business performance, such as returns, benefits, profits 	<ul style="list-style-type: none"> Improving business competitiveness and business direction to be up to date
	<ul style="list-style-type: none"> Business transparency 	<ul style="list-style-type: none"> Ensure good corporate governance Take part in Thai CAC
	<ul style="list-style-type: none"> Changes in business management and business risk 	<ul style="list-style-type: none"> Conduct enterprise risk management and establish short -and long-term plan
	<ul style="list-style-type: none"> Sustainability performance 	<ul style="list-style-type: none"> Manage sustainability material topics Ensure environmental and social compliance Promote innovation and sustainability initiatives



Customer

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Roadshow / marketing events Business meeting (quarterly) Annual customer satisfaction survey Customer clubs (quarterly) WHA Connect magazines (quarterly) Whistle blowing channel Various all time communication channels i.e. telephone, e-mail, key contact personnel, etc. 	<ul style="list-style-type: none"> Product and service inquiry 	<ul style="list-style-type: none"> Provide product and service information on website and other media Provide prompt respond to customer's inquiry
	<ul style="list-style-type: none"> Quality of after sale services 	<ul style="list-style-type: none"> Establish effective customer relationship management Continuously improve customer relationship management from customer's comments / suggestions
	<ul style="list-style-type: none"> Environment management compliance and standards 	<ul style="list-style-type: none"> Strictly comply with related laws and regulations and apply international environmental management standards where possible
	<ul style="list-style-type: none"> Risk and crisis management 	<ul style="list-style-type: none"> Conduct risk and crisis assessment and implement appropriate mitigating actions Inform customers of relevant risks and crisis management plan and measures



Supplier and Creditor

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Supplier event Supplier site visit Telephone E-mail Whistle blowing channel 	<ul style="list-style-type: none"> Transparency in procurement process 	<ul style="list-style-type: none"> Develop procurement policy and procedure
	<ul style="list-style-type: none"> Business opportunities and collaboration 	<ul style="list-style-type: none"> Conduct suppliers meet customers day
	<ul style="list-style-type: none"> Compliance with WHAUP's standard 	<ul style="list-style-type: none"> Communicate on WHA Group's procurement policy Conduct supplier assessment and provide feedback / corrective action plan to guide suppliers for improvement
	<ul style="list-style-type: none"> On-time payment and following the contract agreement 	<ul style="list-style-type: none"> Follow the contract agreement Disclose information according to the agreed conditions



Competitor

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Business agent Industry association meeting Telephone E-mail Whistle blowing channel 	<ul style="list-style-type: none"> Partnership opportunity 	<ul style="list-style-type: none"> Collaborate in industry initiatives
	<ul style="list-style-type: none"> Fair business competition 	<ul style="list-style-type: none"> Ensure implementation and communication of business code of conduct



Government / Regulator

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> Meeting on occasion Telephone E-mail Whistle blowing channel 	<ul style="list-style-type: none"> Regulatory compliance 	<ul style="list-style-type: none"> Strictly comply with relevant laws and regulations
	<ul style="list-style-type: none"> Stakeholder impact management 	<ul style="list-style-type: none"> Effective stakeholder engagement
	<ul style="list-style-type: none"> Corporate governance and transparency 	<ul style="list-style-type: none"> Ensure good corporate governance and implementation of business code of conduct



Community

Engagement Channels and Frequency	Topics of Interests	Actions and Response
<ul style="list-style-type: none"> WHA Group public hearing and meeting Community activities WHA Group Community engagement survey Local community representatives WHA Group Corporate CSR Program (Clean water for Planet) Whistle blowing channel 	<ul style="list-style-type: none"> Business operation impact on community's well-being e.g. water withdrawal, water discharge quality, chemical leak 	<ul style="list-style-type: none"> Conduct regular community feedback survey to ensure there's no adverse impact on local community Implement mitigating actions where business operation activities affect community's well-being Involve surrounding communities in crisis management and emergency drill
	<ul style="list-style-type: none"> Environmental management performance 	<ul style="list-style-type: none"> Ensure compliance with environmental related laws and standards
	<ul style="list-style-type: none"> Community development and support 	<ul style="list-style-type: none"> Initiate community development programs regularly Share WHAUP's expertise with local communities
	<ul style="list-style-type: none"> Community engagement 	<ul style="list-style-type: none"> Provide effective and prompt respond to community complaints Conduct community meeting to understand community's needs and suggestions

Materiality assessment

WHAUP identified sustainability topics based on internal and external factors covering economic, social and environmental aspects that have influence or impact on the Company's operation and the stakeholders. The sustainability topics are then assessed and prioritized based on the materiality assessment framework of the Global Reporting Initiative (GRI) Standard, while addressing stakeholders' expectations, corporate risk management, and global trends.

Materiality Assessment Process



1. Identification

WHAUP identified its 2019 sustainability material topics by analysing internal factors which are business strategic direction and corporate risk profile whilst considering external factors including United Nation Sustainable Development Goals (UN SDGs), global trends relating to WHAUP's business as well as stakeholders' interests to ensure effective management and benefits for all stakeholders.



2. Prioritization

To prioritize the material topics, WHAUP assessed each material topics by considering 1) the significance of the topic to WHAUP's economic, environmental, and social impacts and 2) the topic's influence on stakeholder's assessments and decisions. The assessment was conducted on the scale of 1-4 which prioritized the material topics into four levels of importance; important, medium, high and very high.



3. Validation

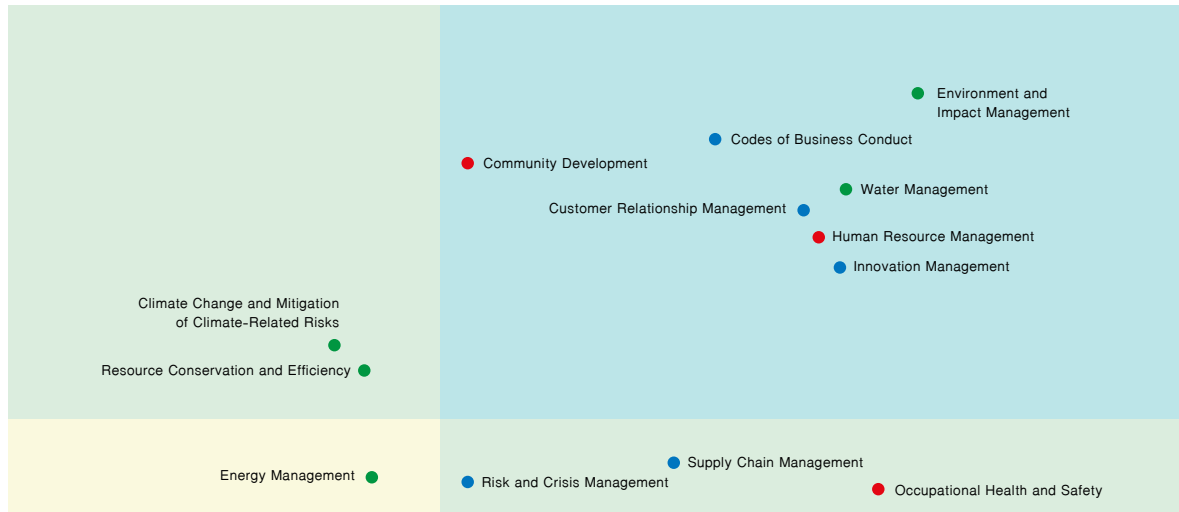
WHAUP conducted a materiality endorsement meeting consisting of senior management from all business hubs chaired by WHA Group CEO. The proposed materiality assessment results were reviewed and approved by the management for disclosures in WHAUP's sustainability report.



WHAUP Materiality Matrix 2019

Very High

Influence on Stakeholder's Assessments and Decisions



Medium

Significance to Economic, Environmental and Social Impacts

Very High

Medium Importance

High Importance

Very High Importance



Governance / Economic

- Code of Business Conduct
- Risk and Crisis Management
- Customer Relationship Management
- Innovation Management
- Supply Chain Management



Social










- Community Development
- Human Resource Management
- Occupational Health and Safety





















Environment

- Environment and Impact Management
- Water Management
- Climate Change and Mitigation of Climate-Related Risks
- Resource Conservation and Efficiency
- Energy Management

Materiality Sustainability Issues

Dimension	Material Topic	Chapter	Corresponding GRI Topic	Impact Boundary		SDGs	Page
				Internal	External		
Governance / Economic	Code of Business Conduct	Code of Business Conduct	<ul style="list-style-type: none"> Management approach (GRI 103) Ethics and integrity (GRI 102-16) Anti-corruption (GRI 205-2, 205-3) 	Employee	<ul style="list-style-type: none"> Shareholder Supplier / Creditor 		28-31
	Risk and Crisis Management	Risk and Crisis Management	<ul style="list-style-type: none"> Management approach (GRI 103) Precautionary principles or approach (102-11) Key impacts, risks, and opportunities (102-15) Effectiveness of risk management processes (102-30) 	Employee	<ul style="list-style-type: none"> Shareholder Customer Community 		32-35
	Customer Relationship Management	Customer Relationship Management	<ul style="list-style-type: none"> Management approach (GRI 103) 		<ul style="list-style-type: none"> Customer 		45-48
	Innovation Management	Innovation Management	<ul style="list-style-type: none"> Management approach (GRI 103) 	Employee	<ul style="list-style-type: none"> Shareholder Customer Community 	   	39-44
	Supply Chain Management	Supply Chain Management	<ul style="list-style-type: none"> Supply chain (GRI 102-9) Management approach (GRI 103) Supplier Environmental Assessment (GRI 308-1, GRI 308-2) Supplier Social Assessment (GRI 414-1, GRI 414-2) 	Employee	<ul style="list-style-type: none"> Supplier / Creditor 	  	36-38

Dimension	Material Topic	Chapter	Corresponding GRI Topic	Impact Boundary		SDGs	Page
				Internal	External		
Social	Community Development	Community Development	<ul style="list-style-type: none"> Management approach (GRI 103) Economic Performance (GRI 102-1) Indirect Economic Impacts (GRI 203-2) Local Communities (GRI 413-1) 	Employee	Community	  	62-69
	Human Resource Management	Human Resource Management	<ul style="list-style-type: none"> Management approach (GRI 103) Organizational profile (GRI 102-8) Employment (GRI 401-1, GRI 401-2) Training and Education (GRI 404-1, GRI 404-2, GRI 404-3) Diversity and Equal Opportunity (GRI 405-1, GRI 405-2) 	Employee		   	56-61
	Occupational Health and Safety	Occupational Health and Safety	<ul style="list-style-type: none"> Management approach (GRI 103) Occupational Health and Safety (GRI 403-1, GRI 403-2, GRI 403-4, GRI 403-5, GRI 403-6) 	Employee	Supplier Community		50-55
Environment	Environmental and Impact Management	Environment and Impact Management	<ul style="list-style-type: none"> Management approach (GRI 103) Emissions (GRI 305-7) Effluents and Waste (GRI 306-2) Biodiversity (GRI 304-1) Environmental Compliance (GRI 307-1) 	Employee	Customer Community	 	71-77
	Climate Change and Mitigation of Climate-Related Risks	Climate Change and Energy Management	<ul style="list-style-type: none"> Management approach (GRI 103) Energy (GRI 302-1, GRI 302-4) Emissions (GRI 305-2) 	Employee	Customer Community	  	82-86
	Energy Management						
	Water Management Resource Conservation and Efficiency	Water Management	<ul style="list-style-type: none"> Management approach (GRI 103) Water and Effluents (GRI 303-1, GRI 303-2) Effluents and Waste (GRI 306-1) 	Employee	Customer Community	    	78-81



GOVERNANCE AND ECONOMIC

- Codes of Business Conduct
- Risk and Crisis Management
- Supply Chain Management
- Innovation Management
- Customer Relationship Management



Code of Business Conduct

WHAUP recognizes the importance of good business code of conduct as an effective tools to maintain stakeholders' trust and confidence while reducing corporate risks that may lead to business disruption. The Company also ensures its regulatory compliance as a basis of business practice as it has been proven that corporate misconduct not only results in damage to reputation but can also lead to financial loss and loss of license to operate. To mitigate potential risk to the business, WHAUP commits to conducting fair business practice and recognizes the importance of integrity and transparency as the fundamental factor to maintain good relationship between the Company and stakeholders for sustainable growth of its business.

WHAUP cultivates fair and transparent business practices to all employees while expects all stakeholders in the business value chain to abide by the same practices. In addition, the Company adopts WHA Groups' corporate values of which 'Integrity' is one of the five values (Advance, Champion, Resourceful, Partnership, and Integrity) that guides the organization to sustaining long-term achievement.

In order to ensure that all management and employees cultivate integrity and act in line with the organization's value, WHAUP's Corporate Governance Committee established WHAUP Code of Conduct that has been

endorsed by the Board to serve as a principal guidance for its directors, management, and employees to perform their roles in an appropriate and transparent manner. WHAUP communicated the Code of Conduct with 100% of its management and employees and have expanded the communication scope to cover business partners and suppliers while expecting all internal and external stakeholders to comply and follow the Company's Code of Conduct in all activities within the scope of their responsibilities. Besides communication of the Code of Conduct, WHAUP also sends out reminders to all employees and communicates with relevant stakeholders on no gift policy prior and during the festive seasons. To affirm the commitment to anti-corruption and bribery for business interest, WHAUP has joined Thailand's Private Sector Collective Action against Corruption (CAC) and has been certified by CAC Council's meeting in November 2019.

WHAUP has revised the Code of Conduct to meet the standard of Thailand's Private Sector Collective Action against Corruption (CAC) by including Anti-Corruption Policy and No Gift Policy which was approved by the Board in February 2019. The Company's active communication and promotion of integrity and accountability have been reflected in zero report of corruption case and breach against the Code of Conduct.



0 Reported corruption case



100% of employees have been communicated on the Code of Conduct

WHAUP Code of Conduct

In order to promote good governance with focus on business operation whilst considering social responsibility and expectations of the stakeholders, the Board of Directors has provided Code of Conduct to serve as a guidance of favorable practices to be observed by management and employees. The Code of Conduct manual is available in both Thai and English language to reach local and foreign stakeholders and can be downloaded from WHAUP's website. The Code of Conduct comprises of expected business practices, guidelines on conflict of interest, use of internal information, anti-corruption, gifting, political contribution, protection of Company's assets, documentation, intellectual property, information technology, human rights, practices towards stakeholders, occupational health and safety, as well as whistleblowing procedure.

The Code of Conduct is applied to all directors, management, and employees of all levels and positions regardless of their acknowledgement signing. For new employees, WHAUP ensured their awareness and understanding of the Code of Conduct and Anti-Corruption Policy by including a training session on the topics as part of orientation. In 2019, 100% of WHAUP management and employees have

been communicated on the Code of Conduct and signed confirmation of acknowledgement. The Code of Conduct is subject to review annually by Corporate Governance Committee.

In case there are any report of breaches against the Code of Conduct, Corporate Secretary will consider the case and proceed the investigation process per whistleblowing procedure to ensure the case is properly resolved and reported to the management.

Corporate Values

As part of WHA Group, WHAUP adopted WHA Group corporate values to ensure WHAUP employees hold the same values and carry leadership competencies to drive WHAUP and WHA Group to achieve its vision. Integrity is one of the 5 elements of the corporate values (Advance, Champion, Resourceful, Partnership, and Integrity). The Group aims to develop integrity value in all employees to cultivate trust and confidence from clients while adhering to transparent working culture, promise, and sincerity. In addition, the integrity value also develop the employees to be diligent and ethically and socially responsible.



Advanced



Champion



Resourceful



Partnership



Integrity





Anti-Corruption

WHAUP values honest, transparent and fair business practice and considers corruption as unacceptable practice. The Company determines to prevent corruptions in the business and has declared its intention to join Thailand's Private Sector Collection Action Coalition against Corruption (CAC). The Company was certified as Thai CAC member by CAC Council's meeting in November 2019.

To ensure the Company's intention to anti-corruption, WHAUP announced Anti-Corruption Policy to prevent misuse of authorities and ensures that its business operates in a lawful manner. The policy applies to all operations and its relevant activities. The Company strongly encourages the directors, management, and staffs to take part in anti-corruption activities and report any conflict of interest. All management and employees have been communicated on the policy as part of Code of Conduct training in 2018. In 2019, WHAUP published the revised Code of Conduct on its website and informed existing employees of the revision. All employees have signed confirmation of acknowledgement of the revision. For new employees, the Company communicates Code of Conduct through orientation session.

In terms of anti-corruption governance, WHAUP appoints Audit Committee to supervise and ensure that all operations activities are in line with the policy. In addition, the Company assesses the risks associated with corruption, set up measures to reduce the risks as well as expanding the scope of practice to customers and business partners such as guidelines on gifting and accepting gift. In 2019, there was zero reported case regarding corruption.

Whistle Blowing

WHAUP set up channels for employees and external stakeholders to report and inform clues or suspicion of corruption and offenses with measurement to protect reporting persons. The reporting channels for corruption and misconduct related case are:

Reporting Channels

Channels for Employees



- www.wha-up.com
- Human Resource Department
- Comment Box
- CEO@wha-up.com
- auditcommittee@wha-group.com

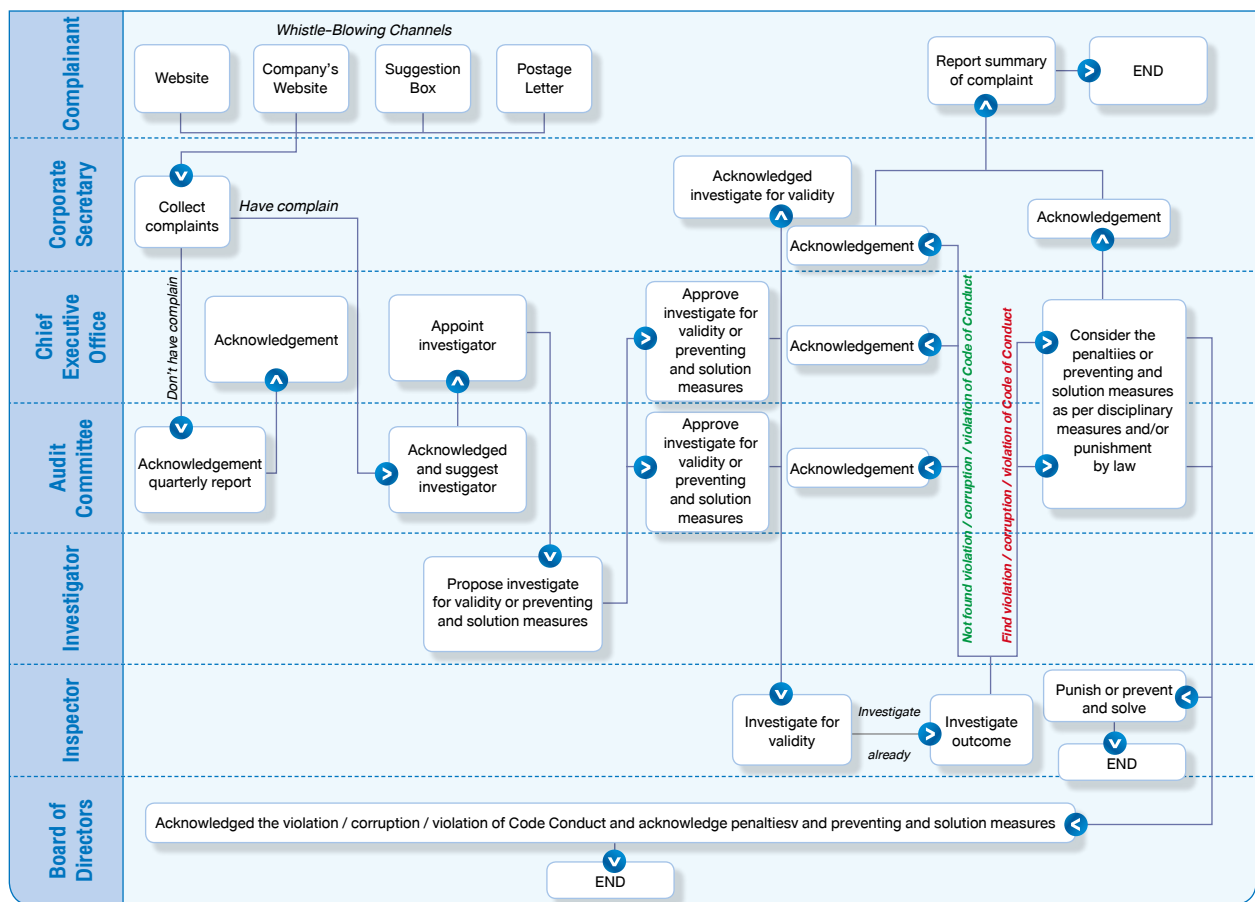
Channels for External Stakeholders



- www.wha-up.com
- CEO@wha-up.com
- auditcommittee@wha-up.com

Once the Company receives the report regarding corruption, Corporate Secretary will report the case to Audit Committee to consider the case and advice on investigation procedure. If the case requires further action, CEO will appoint investigation team to propose investigation measures and proceed the investigation procedure. All valid cases will be reported to the Board.

Whistle-Blowing Process



Risk and Crisis Management

WHAUP is aware of rapid changes in global economy as well as evolving social and environmental landscapes. These changes may pose risks to the Company's business and disrupt WHAUP's business growth and the interest of WHAUP's investors and stakeholders.

The Company therefore gives high importance to risk management and set up risk management governance and Risk Management Policy. WHAUP appoints Risk Management Committee to oversight management of risks covering both risks from external factors and internal management risks. The Company conducts Enterprise Risk Management as the corporate wide tool to manage at the operational level, the Company also ensure that all employees are communicated and aware of the importance of risk management.

Risk Management Governance

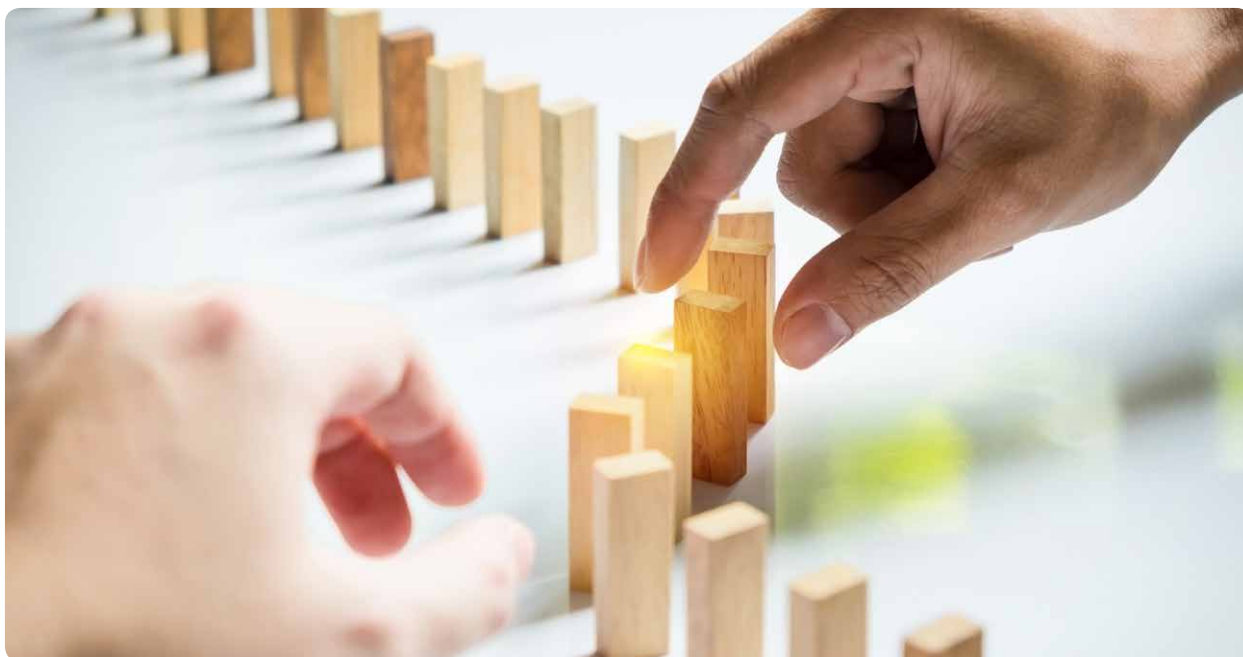
In order to manage risks effectively, WHAUP's Board of Directors appoints the Risk Management Committee to determine risk management policy that governs the entire organization's risk management and oversight risk management system and process to reduce the impact on the Company's business. The Company also sets up Risk

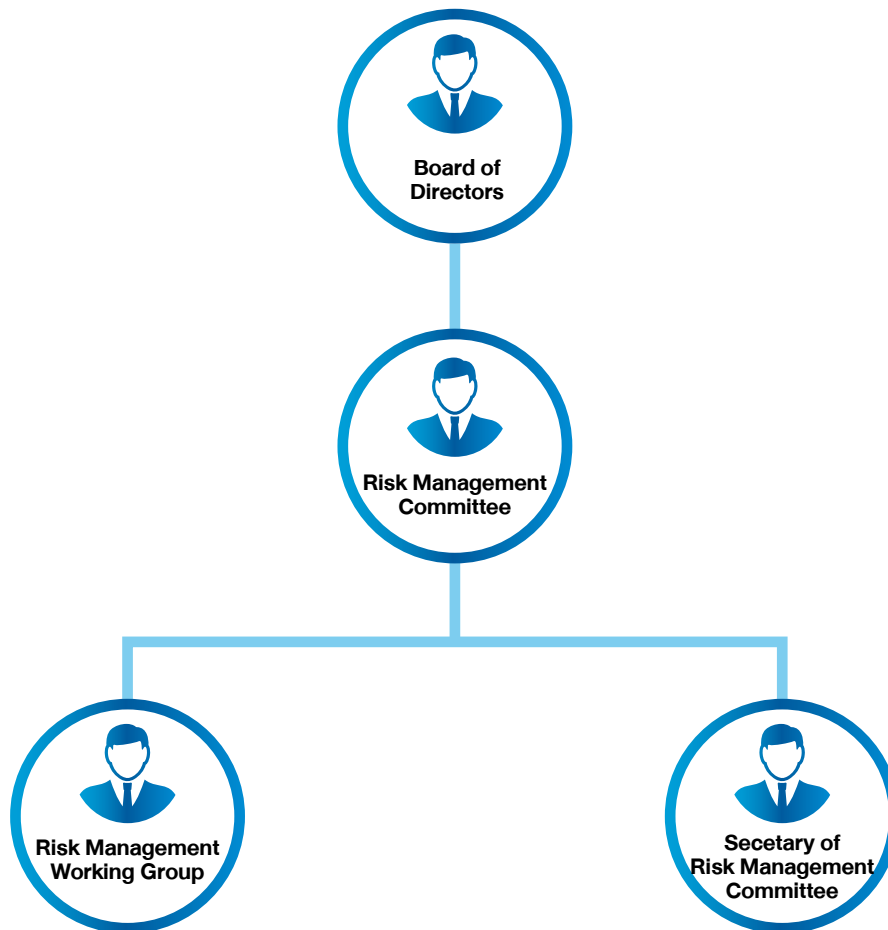
Management Working Group which has representatives from each department to manage the related risks at operational level.

Risk Management Committee

WHAUP's Risk Management Committee consists of three Company's directors who have knowledge and expertise in support the Company's risk management. The Committee will conduct meeting at least twice a year. The Committee has the responsibilities to review the scope of risk management policy, monitor and support the compliance of risk management policy, report key risks and risk management plan to the Board of Directors, consider report of risk working team as well as provides guidance as appropriate to ensure effectiveness of the risk management. In addition, the Committee also has the duty to coordinate with Audit Committee for appropriate internal control and support risk culture of the Company.

In 2019, the Risk Management Committee held 2 meetings to review key and urgent risks to render the effectiveness of the Company's risk management and ensure the risks are under control.





Risk Management Working Group

WHAUP's Risk Management Working Group consists of representatives from all departments. The working group has responsibilities to assess the risks and assign relevant functions to manage the risks. To ensure the effectiveness of risk management, risk management performance is set as part of each department's KPI. The responsible department will determine risk management approaches at department level. This includes procedure, implementation, and monitoring system. Besides, the working group risk management performance evaluation and risk assessment are reviewed every quarter to ensure that the risks are properly managed.

Enterprise Risk Management Process

As Thailand's leading provider of public utilities and power services, WHAUP recognizes various risk factors arising from changes of internal and external factors, including the environment that may affect its operations. The Company therefore conducted Enterprise Risk Management based on WHA Group's framework to identify material risks and assess the impacts of risks on its operations. The Company's risk assessment covers four kinds of major risks; strategy risk, operational risk, financial risk and compliance risk. All risks were analyzed in connection with its two core businesses which are water utility and power business.

Key Risks

In 2019, the Company has identified following material risks:



Water Business

Strategy Risk	<ul style="list-style-type: none"> Revenue of the water business mainly derives from customers in the WHA Industrial Development Public Company Limited's industrial estates and industrial lands Risk relating to customer concentration Risk relating to reliance on the major suppliers of raw water procurement
Operational Risk	<ul style="list-style-type: none"> Risk relating to an ability of the Company to increase public utilities price in the industrial estates Risk relating to the deterioration and damage of the water production and distribution system Risk relating to severe accident, drought and natural catastrophe Risk relating to uncertainty in economic, political and social condition and laws which may affect the Company's business expansion plan and operating results Slowdown in the global economy, changes in the state policy and other macroeconomic factors
Financial Risk	<ul style="list-style-type: none"> Financial risks from operating performance, financial status, economic environment in Thailand and other countries, access to financial and capital market in Thailand and other countries, and interest rates
Compliance Risk	<ul style="list-style-type: none"> Risk of use and interpretation of the law and the notifications related to the business of the Company Changes to the IEAT's laws, rules and regulations and other applicable laws which are relevant to the business operation of the company
Other Risk	<ul style="list-style-type: none"> Risk from the Company's ability to pay dividends that is not in line with the policy



Power Business

Strategy Risk	<ul style="list-style-type: none"> Investment risk relating to the Company's investments in business over which the Company has no control Risk relating to the deterioration and damage of the water production and distribution system
Operational Risk	<ul style="list-style-type: none"> Risk relating to a shortage of fuels Risk relating to uncertainty in economic, political and social condition and laws which may affect the Company's business expansion plan and operating results Slowdown in the global economy, changes in the state policy and other macroeconomic factors
Financial Risk	<ul style="list-style-type: none"> Financial risks from operating performance, financial status, economic environment in Thailand and other countries, access to financial and capital market in Thailand and other countries, and interest rates
Compliance Risk	<ul style="list-style-type: none"> Risk of use and interpretation of the law and the notifications related to the business of the Company Changes to the IEAT's laws, rules and regulations and other applicable laws which are relevant to the business operation of the company
Other Risk	<ul style="list-style-type: none"> Risk from the Company's ability to pay dividends that is not in line with the policy

Emerging Risk

Apart from enterprise risks, WHAUP has identified emerging risks that could occur and affect the business in the next 3-5 years. The emerging risks include:

1. Water crisis

The increasing population, urbanization, and the expansion of agriculture and industrial estates in the Eastern region have impacts on the water availability and water quality in the area. WHAUP notices the two major water crisis in the region which consists of severe flooding during rainy season and extreme drought in the dry season. The risk of water scarcity have been more prevalent and may become worse in few years, disrupting not only WHAUP's business but also the customers and the surrounding communities' wellbeing.

To mitigate impacts of water scarcity and ensure WHAUP and its stakeholders have adequate water during dry season, WHAUP set up measures to reduce raw water withdrawal through water reclamation and water reuse process. In addition, the Company actively communicates with customers about water supply and raise awareness of water crisis among its employees and stakeholders through 'Clean Water for Planet' program. The Company works closely with WHA Industrial Development (WHA ID) and local governments in monitoring water supply.

2. Water Cost

WHAUP produces and distributes industrial water to customers in WHA industrial estates and industrial lands in which raw water is the key raw material for the operation. Due to water scarcity and the increased water demand in the region, increase in raw water price in the near future is anticipated. Currently, WHAUP mainly relies on major raw water suppliers and procures raw water from 3 main sources; 1) 80% from Eastern Water Resources Development and Management Public Company Limited (East Water), 2) 10% from the Royal Irrigation Department (RID), and 3) 10% from WHA ID Group's internal natural water reservoir.

If East Water and RID significantly increases the selling price of water, WHAUP will be adversely impacted in the financial and operation aspects. To reduce the risk, WHAUP plans and has been implementing mitigating actions of; 1) considering to build additional water reservoir in some of WHA industrial estates, 2) exploring natural raw water resources, and 3) implementing water recycling system.

Crisis Management

WHAUP is aware that continuous changing environment could pose challenges to the Company's business. Unexpected event such as natural disasters, disease pandemic, terrorism, etc. could affect WHAUP's operations and cause damages and losses on the Company's assets and the life or impacts on the stakeholders. The Company therefore developed Business Continuity Plan (BCP) to ensure its prompt response to the crisis and can continue the business during crisis events.

Risk Cultures

In order to ensure effective risk management and control system, WHAUP gives importance to creating awareness of risk and crisis management among the employees and involves risk management into the employees' roles and responsibility. The company sets risk management as part of employees' KPIs to promote employees' awareness about risk management related to their roles. Furthermore, WHAUP conducted risk management workshop to communicate the Company's key risks to the employees and train the employees on risk assessment and controls. In 2019, 8 of WHAUP's top management participated in the risk management workshop and had communicated the risk management with their teams.

Supply Chain Management

WHAUP business involves interaction with hundreds of suppliers and contractors throughout the business value chain. The Company regards the suppliers and contractors as important business partners who contribute to the success of WHAUP's business. At the same time, WHAUP is aware that the activities performed by the business partners could create negative impacts on society and environment and WHAUP can be complicit in such activities if lack appropriate supplier control measures.

WHAUP's procurement and supply chain management are managed by WHA Group. In order to improve work efficiency and minimize potential supply chain risks on the Company's business, society and environment, WHA Group develops measures to manage the suppliers and contractors, both new suppliers and existing suppliers, involved in all WHA Group's business activities. WHA Group procurement system allows each business hub to conveniently access supplier database that is related to their business while limits access to other business units' supplier data for data security reason. In addition, procurement procedure is developed based on ISO9001 and 14001 standards and covers procurement practices, procurement policy, level of procurement approval authority, procurement process, new supplier selection process, supplier evaluation, contract agreement and cancellation, and payment.

In addition to WHA Group procurement procedure, WHAUP regularly communicates with the suppliers through supplier meetings, site visits, and supplier evaluation program to improve work efficiency. For construction work, WHAUP monitors the construction safety standards and ensures construction workers' safety by conducting Job Safety Analysis on the site.

Knowing the Chain

WHAUP has over two hundreds suppliers and contractors who provides products and services to the business such as raw water, chemicals, laboratory, and maintenance service. If not managed well, these activities could have negative impacts on WHAUP's business continuity and stakeholders. At the same time, the impacts may affect the suppliers' stakeholders, business, and environment. WHA Group therefore puts in place "Supplier Code of Conduct" and communicates the guidelines and expectations to suppliers and contractors, as well as ensures strict compliance to ascertain stakeholders that the Group is committed to sustainable supply chain management practices and foster national economic development.

WHAUP's main suppliers and contractors can be broken down by following categories:



Water Business

- Piping and pumping
- Water plant construction
- Chemical supplies



Electricity Power Business

- Solar panels
- Inverters and devices
- EPC contractor and consultant

Supply Chain Risk Management

Apart from procurement procedure, WHAUP conducts supplier risk assessment in areas of business conduct, environmental impact, and social impact to manage the supply chain sustainably and help reduce the supply chain impacts. The Company also implements supply chain risk management to the process of New Suppliers Selection and Supplier Evaluation.

Supply Chain Risk Management



Supplier Performance Classification



Performance: Excellent

- Score range 80-100%
- Action: Supplier to complete self-evaluation every two year



Performance: Good

- Score range 60-79%
- Action: Supplier to complete self-evaluation annually



Performance: Fair

- Score range 25-59%
- Action: Supplier to submit ESG Corrective Action Plan and complete the action within 6 months period with re-audit.



Performance: Poor

- Score below 25%
- Action: Supplier to submit ESG Corrective Action Plan and complete the action within agreed timeline. Business contract shall be terminated if the supplier fails the re-audit.

New Supplier Selection Process

When WHAUP requires new goods or services that cannot be provided by the existing approved suppliers, the Procurement Department will screen potential suppliers and select the most qualified suppliers. This will be done through new suppliers' selection process as guided in the Procurement Procedure. All potential suppliers will fill in the pre-qualification form (PQ) which consists of questions to check whether the potential suppliers have policy or management in business integrity, safety management and environmental impact management besides common questions regarding quality, price, and capacity. This is to reduce the supplier-related risks and to ensure that the suppliers will conduct the business responsibly. In 2019, WHAUP had 1 new supplier of utility who passed the pre-qualification assessment and become the Group's approved supplier.

Supplier Evaluation

For existing suppliers and contractors, the Group has separated set of evaluation forms which will be completed by the user and the Procurement Department annually to assess the suppliers and contractors. The supplier's evaluation form mainly assesses quality of products/services, price, delivery, and cooperation while the contractor's evaluation form includes additional criteria regarding compliance with WHA Group's environmental policy, quality, environment, health & safety procedures, etc. as their services have higher risks in those areas. After the evaluation, the Group will inform the suppliers and contractors about the result and agree on corrective action plan if the supplier/contractor's evaluation result does not meet the Group's standard. If the suppliers or contractors receive poor evaluation result for two years consecutively, they will be removed from the approved vendor list (AVL) and the Procurement Department will issue a written notice. In 2019, 99% of WHAUP's suppliers and contractors have been evaluated and all of them passed the evaluation.

Critical Supplier

WHAUP is aware that business disruptions and discontinuity of supplied products and services can cause irreparable damage to the business. To ensure the efficiency of supply chain management, WHAUP has identified critical suppliers of which the Company set up additional management measures to reduce supplier impacts and support the suppliers for business continuity and long-term business growth. Critical suppliers are identified through ABC Analysis (spending analysis) along with additional criteria such as provision of essential or difficult to replace components and professional service such as interacting with government agencies on behalf of the Company. In 2019, critical suppliers represented 4% of WHAUP's total active supplier base, and covered up to 77% of the WHAUP's total purchases. The critical suppliers are water and power suppliers.

Number of Total Suppliers	Number of Critical Suppliers
207	8

Supplier Category	% of spending
Power	58.66
Water	35.32
Solar panels	6.02

Promoting Local Suppliers

In 2019, WHAUP and WHA Group in collaboration with Thailand Board of Investment and Thai Subcontractors Promotion Association organized "Vendors Meet WHA's Customers" event at Pattana Golf Club & Resort, Chonburi with 13 buyers and 139 suppliers participated. The event was the perfect occasion for manufacturers from different industries to meet local suppliers and build new business relationships, enabling target buyers to business solutions while creating new opportunities for the local suppliers.



Innovation management

In the present days, all businesses are facing technology disruptions, for example, robotic technology and internet of things (IoT), etc. WHAUP is aware that changes in technologies may affect the Company's business in both negative and positive ways. Thus, WHAUP embraces the challenges and ensures the Company is kept up to date of new technology and innovation. As the world is transforming, customers' needs are changing as well as the business competitors. WHAUP sees this as an opportunity to improve its products and service and create new business opportunity to ensure the organization grows sustainably.

WHAUP is committed to advancing in the business through provisioning of environmental friendly and innovative power and utility solutions to serve the customers' requirements. For water utility business, the Company sets its five years strategic direction to introduce new utility innovation focusing in membrane technology and the reclamation concept. The Company also aims to become the leading key developer of micro-grid and captive energy business to serve industrial customers while implementing innovation to improve energy business to serve wider customer base. In order to pursue the innovation leadership position in the industry, the Company has started digital transformation plan as part of WHA Group strategy to build innovative and high performing organization through human capital development, early adoption of innovative solutions, and collaboration with innovation expertise.

To follow the Company's ambitions and support the Group's vision, WHAUP defines its targets to fulfill WHA Group's 5 Year Strategic Directions and communicates its business outlook to all employees. Moreover, the Company actively motivates the WHA's Innovative DNA of the employee through WHA Group's Innovation Leadership Program.

Smart Solutions

WHA Group's strategic directions focus on raising the bar for its core business, further embracing innovation and smart technologies, continued development of win-win collaborations with industry leaders, as well as maximizing the Company's unique business synergies. The smart infrastructure and technologies will enhance WHA Group's capacity to support smart business solutions and continue to provide promising services and business acceleration for the clients of all business hubs. As part of WHA Group, WHAUP has been promoting innovation in both utility and power business as follows:





Smart Utilities

WHAUP aims to introduce new solutions and innovation in order to improve products and serve wider customer base. The Company applies the advantage of the Internet of Things (IoT) to provide real time information that consists of the utilization of industrial land, industrial water, production processes, solar rooftop panels, online monitoring and management systems, the smart power grid, waste management and utilities management. Environmental protection is enhanced by smart systems at the Industrial Estate Monitoring Center for air quality monitoring and online wastewater treatment control.

For electricity service, the Company signed a memorandum of understanding with Provincial Electricity Authority (PEA) for a joint feasibility study on smart micro grid system to reduce electricity cost and increase reliability within the industrial estate. If study result is favorable, the project will pave way for approximately additional 50 MW of solar power development which will help industrial users to save around 25.2 million baht in total per year and achieve around 1,075,000 tons of carbon reduction over the project life.



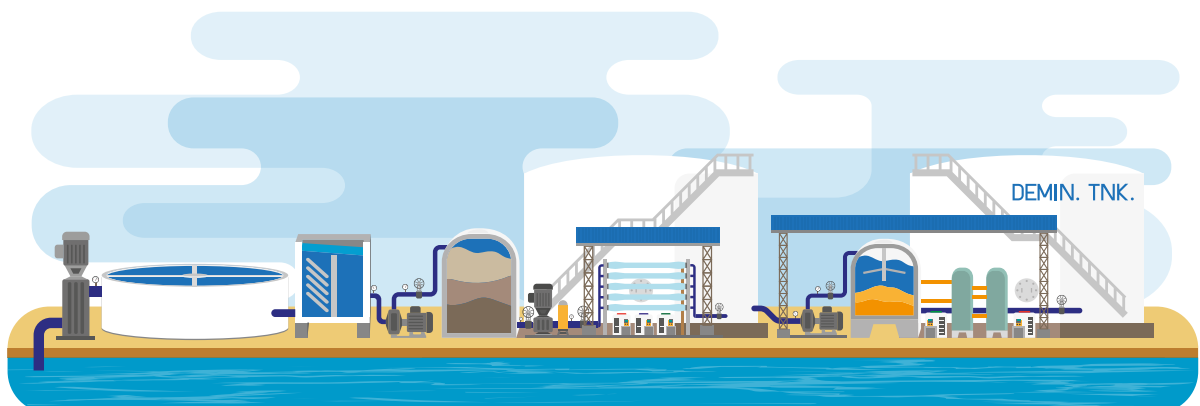
Demineralized Water Production

WHAUP commits to provide fully integrated utility and continuously develop the service to ensure that customers receive the best products and services that meet their requiring quality. In addition, the Company also consider elevating the quality of living of neighboring community while reducing environment impact and resource consumption through the use of innovation.

In 2019, WHAUP developed water treatment innovation by upgrading wastewater reclamation process to produce demineralized water. The demineralized water is produced by membrane and ionic exchange technology to remove all minerals from reclaimed water. The demineralized water, also called de-ionized water, is considered pure water that does not contain any trace of minerals and is used as industrial water in certain industry that requires pure water to prevent machinery and equipment erosion from chlorine. The customers includes power plants, petrochemical plants, electronics factories, etc.

The project was piloted at WHA EIE and added business value to the Company up to 55,000,000 Baht per year. The demineralized water technology also help reduce freshwater withdrawal up to 1.5 million cubic meters per year.

Membrane and ionic exchange technology



Chonburi Clean Energy (CCE)

Chonburi Clean Energy (CCE) is a waste-to-energy plant project with a capacity of 8.63 MW to convert over 400 tons of non-hazardous industrial waste into electricity per day, or approximately 100,000 tons per year. CCE is a collaboration between WHAUP, Glow Energy, and SUEZ Company to offer innovative solution that is also environmental-friendly for industrial waste disposal solution to the factories in WHA industrial estates. The project is located at WHA Chonburi Industrial Estate 1 (WHA CIE1), in Chonburi province, Thailand and has approximately 1.8 billion THB of project investment.

Equipped with the most advanced technologies in terms of reliability, sustainability, stability and environmental protection, CCE is the first industrial waste to energy facility in Southeast Asia to meet European emission standards. The waste incineration technology and air emission control systems convert waste generated from industrial manufacturing activities into superheated steam that will in turn propel a turbine to generate electricity.

CCE Key Technology Features:

Grate incineration and horizontal boiler

The power plant is designed using the most reliable technology in the market waste grated incineration. The process is designed to have, in all circumstances, a flue gas temperature greater than 850 °C for more than 2 seconds to ensure complete destruction of dioxins and furans. The boiler is designed using low NOx combustion technology which allow high availability of the power plant.



Flue gas cleaning

The power plant is designed with the most proven and reliable flue gas treatment technology, an efficient Dry flue gas cleaning equipped with:

- SNCR in first pass of the furnace to reduce NOx
- SOx and acid control
- Dioxins and heavy metal control
- Dust and particle control

Continuous emission monitoring system (CEMS)

The project will be completely transparent on emissions with on-line display to:

- The authorities
- The public via internet

Tipping hall and bunker

The plant has enclosed tipping hall and bunker, designed for optimize traffic flow and storage while minimize odor and dust emissions with negative pressure and odour control system.

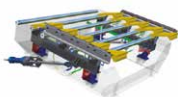
Turbine hall

The plant has efficient and reliable 8.63 MW steam turbine.

Key Technology Features

Grate incineration and horizontal boiler

The power plant is designed using the **most reliable technology in the market** waste grating incineration. The process is designed to have, in all circumstances, a **flue gas temperature greater than 850°C for more than 2s to ensure complete destruction of dioxins and furans**. The boiler is designed using **low NOx combustion technology** which allow **high availability** of the power plant.



Flue gas cleaning

The power plant is designed with the **most proven and reliable flue gas treatment technology**, an efficient Dry flue gas cleaning equipped with:

- SNCR in first pass of the furnace to reduce NO_x
- SO_x and acid control
- Dioxins and heavy metal control
- Dust and particle control

Continuous emission monitoring system (CEMS)

The project will be completely **transparent** on emissions with **on-line display** to:

- The authorities
- The public via internet

Tipping hall and bunker

Enclosed tipping hall and bunker, designed for optimum traffic flow and storage. Minimized odor and dust emissions with negative pressure and odour control system. Optimized mixing for stable and reliable operation.

Turbine hall

Efficient and reliable
8.63 MW steam turbine.

Why it's Better?



Socially useful

- Annual save around 22,400 t of CO₂ emissions. (Electricity generated in Thailand kg CO₂ 0.41 2019 data)



Fully-Compliant

- Thai Regulation
- Zero Waste to Landfill internal policy
- Reduce Reuse Recycle internal policy
- Full Traceability policy & ISO 14001



Better than Landfill Solution

- Produces enough green sustainable energy for 10,000 homes (Thai consumption data 2018 - 511 kwh a month)
- Energy recovery
- No bad heritage for next generations
- No risk of soil pollution



Better Efficiency

- High efficiency of the energy recovery
- Adapted to a wide range of waste
- No pre-treatment needed

Energy Generation from Wastes





Innovation Leadership Program

WHA Group held an Innovation Leadership Program in 2019 to ensure all management and employees understands the importance of innovation and can develop the business to meet the strategic direction.

Innovation Leadership Program is an intensive talent development program for 45 internal candidates across WHA Group. The program promotes the skills and capabilities necessary to lead the organization through changes and disruptions as well as encouraging sustainable development in the business to support the growth of WHA Group and career development.

There were 3 WHAUP management from manager to director level who participated the program to guide the potential leaders through an enriching designed innovation project experience which promotes the participants to grow startup-minded and customer-oriented mindset while being innovative. During the program, WHA Group executives took part in the project as coach, project sponsor, and mentors to encourage innovative working atmosphere and promote WHA Group's culture of innovation.



Customer Relationship Management

WHAUP's customer relationship management is based on the Company's commitment to be "Your Ultimate Solution Partner in Utilities & Power with Environmental Care." As the Company's business serves industrial customers, WHAUP believes that good customer management is a fundamental aspect to building a long-term relationship with the customers which promotes long-term economic growth of the Company. WHAUP aims to be Asia's leader in utilities and power businesses that provide total solutions to the customers. The Company is knowledgeable in the services, and proactively improve its service to response to customer's requests. WHAUP also recognizes the customers' needs of innovative solutions to reduce their environmental footprint and ensures fair business practice to foster good relationship and trust.

As WHAUP's customers are also the customers of other WHA Group business, the Company believes excellent customer service is crucial to promote the Company's image which supports WHA Group's reputation. For this reason, WHAUP is committed to good customer relationship management by proactively observing customer's opinions, expectations and suggestions for future improvements through various channels, including internal and external customer events, to establish customers' confidence and secure the Company's leading position as trusted business partners.

WHAUP water business includes water supply and water treatment services to the industrial customers in WHA industrial estates. The Company also provides both conventional power supply and solar rooftop installation services to the customers. Since WHAUP shares majority of the customer base with WHA Industrial Estate, the Company manages customer relationship at group level while proactively engages with the customers through service quality surveys and on-site visits.

Today, WHAUP serves more than 800 customers across ten WHA industrial estates. One of the Company's customer relationship management approach is customer survey which is conducted to improve the services and ensure customers' satisfaction.

To effectively cater to the diverse requests, WHAUP engages with customers through two primary approach; 1) Customer Satisfaction Survey with customers and stakeholders who attend seminar and WHAUP activity, WHA Connect Newsletter, and Customer Relationship Management (CRM) System and 2) Person to person approach which include touch point personnel, customer visit, and customer clubs and showcase.



Survey and Marketing & PR Activities

- Customer satisfaction surveys
- WHA Connect Newsletter
- WHA E-Connection
- CRM System



Person to person approach

- Touch Point
- Customer visits
- Customer clubs
- Customer Showcase

Survey and Marketing & PR Activities

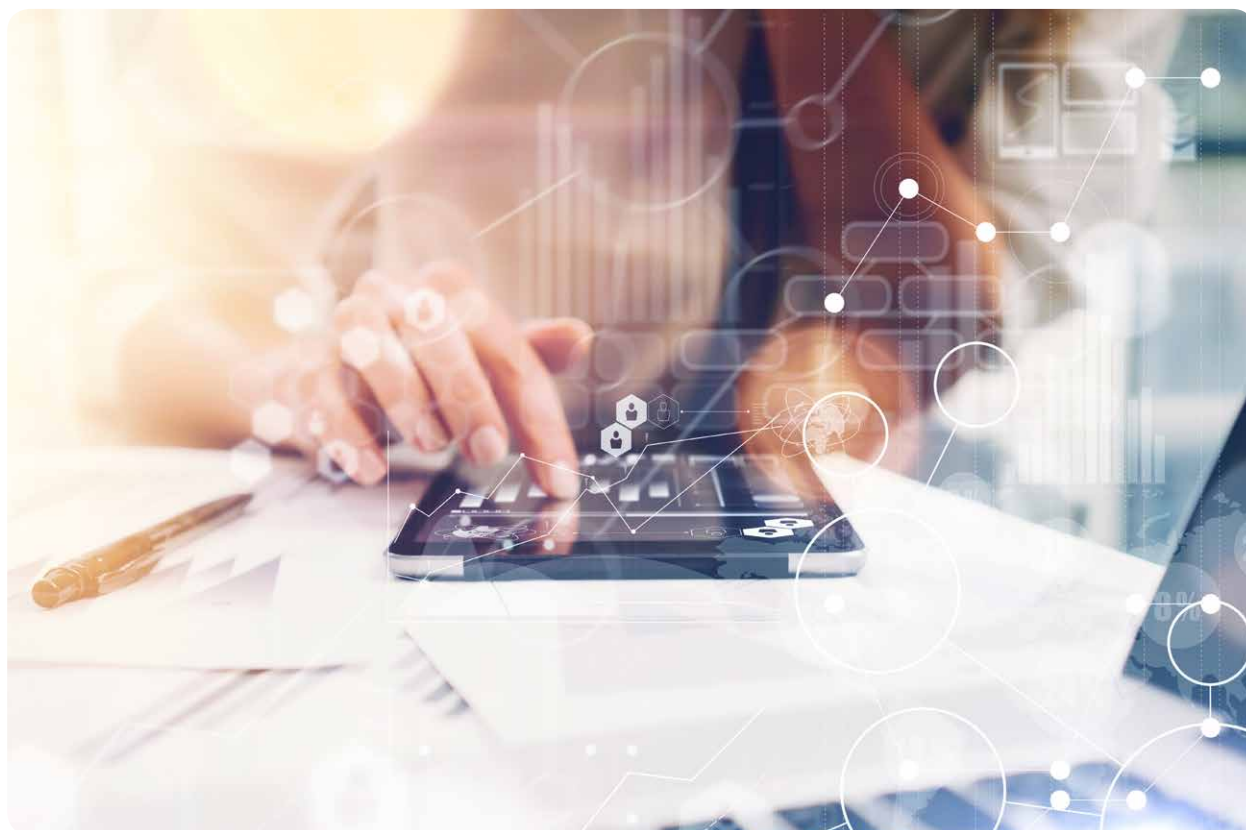
Customer Satisfaction Survey

To evaluate customer satisfaction, WHAUP sends the customer satisfaction surveys directly to the customers through service provider team. The questionnaire assesses customers' satisfaction towards WHAUP on all aspects relating to water products and services such as; quality of supply water, water pressure, service excellence, etc. The evaluation ratings and comments are then consolidated and analyzed by the service provider team. In 2019, WHAUP received an average customer satisfaction score of 94

out of 100. The score slightly decreased from 2018 since the Company increased number of surveys conducted and questions. The survey has provided WHAUP with information on good practices and areas of improvement to ensure the customer satisfaction. For solar power services, the Company will discuss with the customers on the quality of the service and gain the customers' feedback after the project is finished. The Company also plans to develop specific customer satisfaction survey in 2020.

Year	2018	2019	Target 2020
Customer Satisfaction Score	96	94	97
Total Number of Customers Survey	181	264	400

From the 2019 customer survey results, WHAUP has identified key areas that can be improved to enhance customers' experience. There are water quality and quality of electricity service. The Company has followed up and improved the issues promptly to ensure the best customer experience. To enhance customers' satisfaction, WHAUP utilizes the survey data to improve the services. One example was the use of customers' suggestions in WHA ESIE about quality of potable water that sometimes is not clear and has odor after the Company finished fixing water pipe. The customer suggested WHAUP to drain the water after fixing water pipe before distributing to manufacturers in the industrial estates. To ensure the quality of water distributed, WHAUP set up blow off measure to reduce sediment and sand in the water pipes which effectively improve water clarity.



WHA Connect Newsletter

To keep all customers informed of changes, updates and upcoming events in the industrial estates, WHAUP distributes the 'WHA Connect' Newsletter to all customers. The WHA Connect is developed internally and published on a quarterly basis to communicate about WHA Group's products and services, innovations, Company's activities, business collaborations and CSR programs. The WHA Newsletter is available in 2 languages; English and Japanese to ensure that all customers are able to understand the content. This is a channel to keep the customers updated on changes and upcoming events organized by WHA Group. The Newsletter is also used to



showcase customers, share customer news and highlights from customer clubs, WHA Investors club and golf events.

Moreover, WHA Group also has another way to connect with customers that is to distribute monthly E-Newsletter called WHA E-Connection to keep customers updated on WHA Group's news, activities, upcoming events, training programs, and CSR activities.



CRM System

WHAUP uses WHA Group's Customer Relationship Management system 'CRM Platform' to provide a consistent services and proper customer management that aligns with other business units. The system is a centralized platform to enable authorized user in the related department to fill-in customer and supplier data and access to relating customers' data such as customers' needs, future expansion and expectations and how to properly interact with them. For data security purpose, users from the business hub that does not serve particular customers will not be able to access the customers' data. The system will be upgraded and CRM application will be launched in 2020 to effectively manage customers' request and respond promptly.



Person to Person Approach

Touch Point

Customer Relationship Management impacts long-term economic growth of WHAUP and prioritized as important matter to the management as portrayed in the Company's vision statements. WHAUP appoints service provider team as a responsible function and be the Company's key contact person (touch point) for the customers to raise concerns and requests, and to communicate with the customers about WHAUP's new products and services. The Company also ensures that all customers are taken care of with the highest quality of service at all interactions, securing trust and good reputation among the customers.

Customer Visit

WHAUP arranges customer visits to maintain good relationship and follow up on the customers' satisfaction. The visit is led by WHA Group and WHAUP's top management and the service provider team on festive seasons to deliver WHAUP's greetings. Moreover, the Company also celebrated the customers' important business events such as new operation plant opening and merit ceremony.



WHA Customer Clubs

WHAUP strives to create communities through various customer clubs which is WHA Group approach to create a channel for WHAUP and other business units to interact with customers while enabling customers' network and alliances. In the past, customer clubs were formed by the investor's country of origins such as Japanese club, and later expanded to be based on topics of interest such as Director Club, Safety Club, HR Club, Labor Club, Investor Club, etc. Beyond networking opportunities, the customer clubs also provide members with exclusive benefits such as early updates from WHA Group and WHAUP, for instance, timeline of infrastructure project in EEC and opportunity to participate in activities such as WHA golf tournament and training programs.



Customer Complaint Channel

WHAUP values customer's feedbacks and opinions, believing this is a key input for future improvements. For this reason, the Company continuously improves the communication channels to receive and monitor customer complaints. This includes e-mail, website, telephone contact, line account, marketing material, club meeting and direct call. In addition, an application has been developed to receive customers' request and allows the customer to track the progress to optimize work efficiency for both WHAUP team and the customer team. Complaints are reviewed by the service provider team who will determine suitable response and coordinate internally for the solutions.

In 2019, WHAUP received a total number of 2 complaints from customers. The majority of complaints were about water quality. All complaints have been resolved within the due dates and WHA Group has conducted a number of initiatives in 2019 to ensure that similar issues will not occur again.



SOCIETY

- Occupational Health and Safety
- Human Resource Management
- Community Development

Occupational Health and Safety

WHAUP always prioritizes and proactively protects the safety and well-being of all employees and contractors who work on its business activities. The Company realizes that good occupational health and safety management is to have robust preventive measure to managing and training employees on safety standards, fostering an internal safety culture to promote employee confidence and morale. In addition, the good health and safety management also reduces risks of business disruptions due to safety incidences.

As WHAUP operations are located within WHA industrial estates, WHAUP's occupational health and safety is managed by WHA Group's Health and Safety Department. The Group strictly abides by Occupational Safety, Health and Environment Act A.D. 2011 and all related rules and regulations, as well as, international safety standards to ensure its safety management is effective. The Company ensures it follows WHA Group's health and safety procedures in its daily operation. In addition, WHAUP's EHS Manager also takes part in WHA Group Safety Committee and work closely with WHA Group to improve health and safety within its operations.

To ensure health and safety is well maintained and continuously improved, WHA Group applies various management approaches including employee safety training, monitoring of water production and wastewater treatment plants security, fire safety, emergency and response plan, occupational health and safety risk assessment, improvement of safety controls, and monitoring and reporting safety performance. The safety approaches are also applied to the contractors who work on WHAUP's operations or perform work on behalf of WHAUP such as solar rooftop system installation.

In 2019, there was 1 work related injury case at WHA SIL. The case was an accident of an employee who slipped and fell over. The employee had bone fracture and results in 30 lost days of the employee. The Company has conducted incident investigation and put measure to prevent similar accident in the future.

Safety Incident

Year	2016	2017	2018	2019	Target
Number of incident	0	0	0	1	0



OHS Management System

As occupational health and safety is operated at group level, WHA Group appointed a “Safety Department”, led by the Group’s Chief Operating Officer, to oversee all occupational health and safety management at all locations to ensure compliance with all related laws and regulations. All safety officers are qualified and the necessary safety system such as fire detection, fire control, and CCTV are in place.

Work Hazard Identification and Risk Assessment

To thoroughly manage health and safety, WHA Group conducts health and safety assessment throughout its business operations covering all activities in WHA Group’s premises performed by either employees or contractors and identify the hazards related to the tasks to find suitable preventative and control measures. To assure that all risk and hazard assessments are conducted in a systematic way and meet the Occupational Health and Safety standard, WHA Group ensures that all safety officers, responsible for assessing risk, holds Occupational Health and Safety certificate. The health and safety risk assessment is subjected for review annually or whenever there’s change in the operations.

Risk Assessment Process



WHA Group’s risk assessment was carried out according to ISO14000 risk assessment process. The risk assessment begins with listing all work activities in the operations and identify risks and hazards relating to the work activity. The risks and hazards are then assessed and prioritized by its likelihood and impact. Then, the Health and Safety Department will propose and apply control measures to minimize the risk and mitigate the impact.

In 2019, result of the risk assessment shows that WHAUP’s work activities that have high health and safety risks are exposure to chemicals at water treatment plant, solar rooftop installation, and working in confined space.



Safety Risks	Description	Mitigation measures
1. Exposure to chemicals at water treatment plant	Chemical such as Chlorine and Sodium Hydroxide are used in water treatment process and therefore the employees are exposed to the chemicals at workplace.	Provide suitable PPEs to employees, install Cl2 detector and monitor the effectiveness of implemented initiatives by conducting workplace chemicals monitoring and employee's specific health check which is done annually.
2. Risk of falling from height from solar rooftop installation	Workers are exposed to risk of falling from height when install solar rooftop.	Ensure the workers who perform work has been trained to work at height and wear provided protection equipment such as safety harness correctly before they perform work.
3. Confined space	Workers who perform work in confined space in water production/water treatment plant are at risk of being exposed to harmful gas, vapor, fume, or inadequate supply of air.	Identify and evaluate confined space for potential hazards and accidents/incident and formulate suitable control measures (elimination, substitution, engineering control, administrative controls, PPE) and communicate/train workers before performing work in confined space.

Emergency Management

In case of emergency, employees can report all work-related incidents through the following channels; event submission form, complaint form, or directly report to their supervisor. These events will then be thoroughly investigated and taken action according to Emergency Calls Process. In extreme cases, employees can follow the Emergency Response Instruction Process, to remove themselves from situations they believe can cause injury or ill health. The incident will then be thoroughly reviewed by Safety Department to protect employees from any reprisals and prevent future accidents from occurring again.



WHA Emergency Control Center

WHA Group establishes 9 Emergency Control Centers which are located at each of WHA's industrial estate to monitor and suppress emergency situation. The Emergency Control Centers are managed by occupational health and safety experts and equipped with fire control systems ready to operate at any time. In 2019, the Emergency Control Center stopped 1 emergency case in the factory located within the Group's industrial estate. In addition, the Emergency Control Center supported the local authority to stop 5 emergency cases in the surrounding communities.



Emergency Drills

WHAUP participates in WHA Group's emergency drill plan for different emergency events including firefighting and evacuation, hazardous chemicals spillage, traffic accident, flood, and emergency events relating to the factories within the industrial estates. All emergency drills are conducted and evaluated annually.

In July 2019, WHA Group hosted an emergency response drill for chemical spill scenario in a Full Scale Exercise (FSE) level 1 at WHA ESIE. The emergency response drill involved more than 80 people from Industrial Estate Authority of Thailand (IEAT), Department of Disaster Prevention and Mitigation, Department of Labor Protection and Welfare, local authority offices, local communities, customers, workers, WHA Group's employees, etc. The event has raised awareness of potential risks and prepared the employees and stakeholders to manage chemical spill efficiently as it simulated all relevant processes for the event, for example, emergency reporting, first-aid, selection of appropriate PPEs, order and control, etc. The evaluation of the drill performance received 100% review score for all processes including communication, equipment, PPEs, reporting process, and timing.



Contractor Safety

As part of Human Rights and Occupational Health and Safety Policy, WHAUP also gives importance to the safety of suppliers and contractors who perform work at the Company's premises or carry out work at the customers' premise on behalf of WHAUP. All suppliers and contractors have to strictly follow WHA Group's safety requirement. Prior to work, the contractors will receive a training covering 3 areas; environmental policy, the premise's regulations, and safety standards. After the training, the contractors will receive a contractor card which will expire in one year from the issuing date. For those contractors who perform short term work will receive a training but are not required to register for a contractor card. This allows the short-term contractors to perform their work one time only.

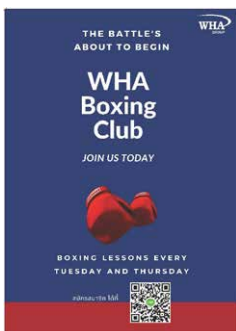


Employee Health and Safety

As part of the Employee Development Policy to foster a robust understanding and integrating occupational health and safety practice for all stakeholders, WHA Group provides training programs to educate employees about workplace safety and emergency responses. At present, the training program includes; emergency drills, fire drills, evacuations, road accident control, flood control and chemical leak accident. New training programs will be developed based on the risk assessment and changes in legal requirements.

WHA Group ensures all employees have access to medical health services and provides suitable annual health checkup program to all employees. In addition, the Group provides a health and accident insurance for all employees to ensure the employees have access to quality medical services when needed. All employees can suggest work condition improvement directly to supervisors, HR, and Safety Department.

Furthermore, WHA Group also promotes employees' recreation activities by supporting employee clubs such as fitness club, boxing club, Yoga club, Football club, Badminton club, etc. to encourage good health and wellbeing of the employees.



WHA Safety Club

WHA Group values the opinion of stakeholders and therefore established 'Safety Club' as a meeting platform for employees, contractors and customers. The safety club allows the stakeholders to meet quarterly and share opinions and stories about safety practices. In 2019, there were 5 safety club meetings with total number of 520 participants from all stakeholders who raised issues, such as traffic improvement, confined space, BBS and Emergency plan, etc. All issues have been reviewed thoroughly by the working team and resolved accordingly.



Human Resource Management



WHAUP recognizes the importance of human resources as a key driver to success of the business. As global population continues to grow to meet the expected 9 billion people by 2050 as projected by the United Nations, societies demographic are notably shifting towards an ageing society. This change affects workforce demographics in the market and leads to shortage of workforce in some areas. WHAUP recognizes this shift in the market and its workplace, observing a growing number of younger generations such as Gen Z in the workplace, compared to the dominance of Generation Y and Z in the past. This signals a clear change in the labor market, evidencing the intensified competition for competent human resources. For this reason, WHAUP adjusted its human resource management approach according to WHA Group's human resource management strategy to reflect the change and cater to the new workforce generation.

WHA's human resource related matters are managed at group level; standard employee engagement, recruitment process, benefit packages, and employee development programs are applied to all business hubs. In 2019, WHA Group implemented various initiatives to satisfy its workforce to ensure the ability to attract and retain capable employees to continue the operations in the future.

WHA Corporate Values

WHAUP considers corporate values as an important foundation to instill the employees to work harmoniously with the other WHA business hubs. The Company believes the 5 elements of the corporate values; Advanced, Champion, Resourceful, Partnership, and Integrity will enhance employees' leadership and competencies to drive the Company through its digital transformation and support WHA Group's achievement.



Advanced



Champion



Resourceful



Partnership



Integrity



Boost Up Your Inspiration for Success

In order to enhance good relationship among WHA Group employees and ensure that they understand and embrace the corporate values which will lead to the Group's success, WHA Group set up a corporate culture activities under the theme "Boost Up Your Inspiration for Success" in May 2019 at a resort in Samutsongkhram province. The event involved department head to staff level employees from all business hubs. The activities encouraged staffs to build growth mindset and boost up team performance through team building activities and workshop. From this workshop, WHA Group employees have learned to adapt to challenges through learning and are able to set mutual goals for their team to improve team success and strengthen their relationship with the colleagues.



Employee Engagement

One of the key human resource management that WHA Group gives high priority is employee engagement which is a process that promotes employees' satisfaction, maintain efficiency, and ensures all employees feel valued and involved in their everyday work. An engagement survey is an important indicator to use in a good way to spot areas for improvement.

In 2019, WHA Group conducted a Town Hall Meeting to inform the employees of the business strategy of each business hub. The Town Hall Meeting involved 65 employees from WHAUP who joined other WHA Group's employees.

Town Hall Meeting

On 8th March 2019, WHA Group arranged a town hall meeting which involved management and employees from all business hubs at Mega Cineplex, Bangkok. During the meeting, WHA Group CEO, Ms. Jareeporn Jarukornsakul, and the CEOs of all business hubs communicated with the employees on WHA Group's strategy, business plan, and the 5 years business direction. The management delivered the content in an easy to understand message and the meeting was set up with informal atmosphere to encourage two way dialogue between the management and staffs. As a complement of Human Resource Department's communication, the town hall meeting allows the staffs to get good understanding of WHA Group's direction and their roles to drive WHA Group to align with the business outlook.



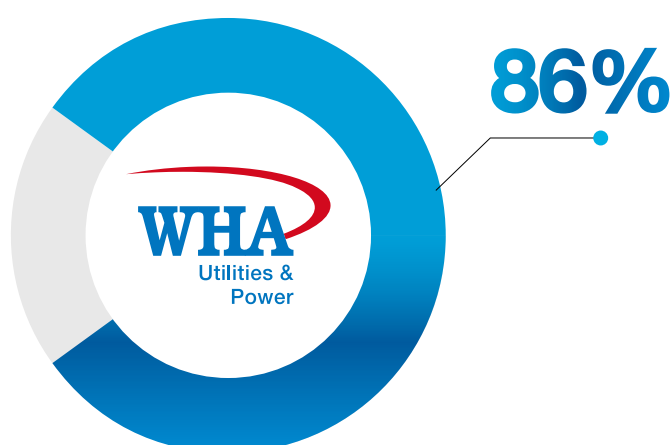
Employee Engagement Survey

WHAUP employees participated WHA Group's employee engagement survey in September 2019 to reflect overall employee satisfaction and address areas where the Company can improve to support the staffs. The survey assessed employee satisfaction on 8 categories; communication, leadership, core value, career, teamwork, work support, work life balance, and employee engagement. The survey were conducted to cover 86.4% of total number of WHAUP employees and received favorable score rating with average employee satisfaction score of 89.2%. WHAUP aims to raise the employee satisfaction score to 92% in 2020. The engagement survey result had been communicated to management including Executives and Department Management via management meeting and was also shared to all staffs through internal share point.

The survey results were used to improve and enhance human resource management for improvements. WHA Group Human Resource Department analyzed the survey result and set up 1-3 year plan of improvement programs and communicated the progress of the programs with the employees during staff quarter meeting and management meeting.

To get a more accurate engagement result, WHA Group plans to survey 100% of full time employees by Year 2022 and utilize external third party to conduct the survey in 2020 to ensure that collected data are truthful and unbiased.

WHAUP Response Rate



Respondents 95 of 100



2019 Employee
Engagement Score

89.2%

Talent Attraction and Retention

WHA Group places great emphasis on attracting and hiring new talents while promoting the career advancement of existing staffs to promote the business growth. The Group sets up recruitment procedure to ensure that selected individuals possess the right knowledge, skills and abilities for the position while having the right mindset that would fit to the Group's culture. WHA Group ensures fair and non-discriminating recruitment process for both internal and external candidates by considering the candidate's potentials. The Company also developed transition assistant program to promote career advancement and transition for existing employees. This includes job-rotation program, internal job opportunities, pre-retirement planning, and flexible work employment program.

In 2019, WHAUP recruited a total number of 20 new positions making total number of 110 employees in the end of the year. Most of the Company's employees are local people to the business operation and 100% of the employees were hired on permanent contract.

For existing employees, WHA Group retains well performing employees by ensuring fair employee performance review, promoting career advancement and providing necessary training to upskills the employees. As wage payment is the main interest of employees, WHA Group engages with external institution to assess its employee's payment against the market annually to ensure WHA Group remains competitive in labor market and leading businesses. Regarding employee performance appraisal, WHA Group implements Performance Management System to assess each employee's performance against their KPIs to ensure fair review and effective work.

Welfare and Benefits

WHA Group seeks to promote good living standard for the employees and their families. The Group therefore ensures the welfare and benefits provided to employees are appropriate and where possible, exceeds the regulation requirement. All employees were informed of their rights to receive the welfare and benefits at the beginning of their employment. All WHAUP full time employees will receive a standard WHA Group benefit package consisting of life and accident insurance, health insurance (for employee and their registered family members), annual health check, uniform, provident fund, and financial assistant fund. The benefits applies to all employees regardless of their gender, age, and nationality.

In addition to the standard benefits, employees are allowed to propose benefits improvement through Welfare Committee and HR Department. In 2019, staffs proposed employee sport clubs and the Company has agreed to support the sport clubs therefore the staffs set up WHA Group employee sport clubs consisting of activities including yoga, fitness, boxing, and football.

Apart from the sport clubs, WHA Group promotes good health among employees and arranged 2 employee well-being activities in 2019. They are:

WHA Go Grow Goal!

WHA Group organized "WHA Go Grow Goal!" activity with the objective to strengthen employee's relationships within the organization and encourages the employees to develop good health. During the event, there were many activities for all participants. One highlight activity was the special soccer match between Bangkok Office Team vs Site Team. This event was held in May 2019 at Bowin Arena, Chonburi with participation from 40 employees of WHAUP.



Run for Blind #7

WHAUP collaborated with WHA Group to set up "We Run for Blind #7" as part of the Group's social program to support visually impaired persons while promoting the health of participants. The activity was held in September 2019 at Vachirabenjatas Park, Bangkok with 20 employees from WHAUP who happily participated and enjoyed the healthy activity.



Human Capital Development

Employees are paramount important factor for WHA Group's successful operation. Therefore the Group established employee training and development program to support the employees to reach their full potential and capabilities. The Group identifies training needs and sets up annual development program for the employees. The development program covers 4 areas:

- Management skills development e.g. ABDP Program and LDP Program
- Business and digital knowledge development e.g. Business Game program and Digital Transformation program
- Technical skills development
- Talent management e.g. Innovation Leadership program

In 2019, there were 12 in-house training programs and external training programs for WHAUP's employees with total employee training cost of 1.1 million baht. The average training hours per employee was 15 hours per year per employee. The highlight training programs in 2019 are as follows:

Leadership Development Program

In 2019, WHA Group set up three leadership programs for different level of employees. The first program is ABDP program, in collaboration with Thammasat University, which was developed for middle management. The program focuses on the middle management level of all business hubs to enhance and uplift their management skills. For senior management and executives, LDP program was developed to boost up their leadership competencies to support the achievement of WHA Group vision and strategy and as part of management succession planning. The program was developed in collaboration with Chulalongkorn University and was delivered to WHA Group's 45 senior management and executives of which 4 senior management were from WHAUP. The program started from May — Dec 2019 with the objective to enhance the Group's business opportunities through young talented and develop talent pools. This program has also involved executives to support as coaches, and project sponsors through the designated innovation projects.

The key learning values are classified at each business levels as follows;

1. **Organization strategic level:** the future leaders have execution abilities, strategic decision making and entrepreneurial creativity.
2. **Business operation level:** the participants will have skills of project management, customer and business communication, and technical and business knowledge.
3. **Functional level:** the participants will be able to prioritize task, manage multiple tasks, coordinate with team members, and manage resources.
4. **Leadership skills:** participants will enhance their leadership competencies, team management and interpersonal skill.

Functional Skills Development Program

In 2019, WHA Group delivered the competencies and development program for the staffs to improve their functional and technical skills and knowledge they needed such as Business Sales Negotiation, Business Games (strategy), ISO, and safety training. The department head and manager assessed the training needs of the staffs and identify the suitable program for their team staffs. There were total 150 employees across WHA Group with 40 staffs from WHAUP who joined the program to improve their requisite skills for their work.

Corporate Culture

WHA Group has stand for the importance of the organizational culture and how the staffs embrace the culture and apply it on a daily basis. The Group sets clear values which contribute towards good behavior and work culture. The values are Advance, Champion, Resourceful, Partnership and Integrity. To ensure all staffs embrace the Group values, WHA Group initiated corporate culture activities, for examples, Team Building, Service Excellence Workshop, The Power of WHA Group Cultures, Staff New Year Party and other annual events.

The promotion of corporate culture through various communication and related activities has improved "WHA Group Core Value" score in 2019 to 91% among WHAUP employees.

WHA Group Corporate Culture



Human Rights and Labor Practices

WHAUP ensures its employee management complies with national labor laws and related regulations. The Company gives high importance to anti-discrimination throughout its operations and promote diversity in its workforce at both management and staff levels. All employees are provided with equal opportunity from recruitment process to career advancement. In addition, the Company ensures fair lay off with recorded process. Moreover, employees are allowed to express their opinion and propose suggestions to the management through Welfare Committee or raise their concerns directly to their management or suggestion channels.

In addition, WHAUP respects human rights and applies WHA Group Human Rights Policy to all level of employees. All employees must be aware of human rights related matters and value human dignity, freedom, and equality while comply with related international laws and standards. This is to ensure that the Company's business activities do not violate human rights of internal and external stakeholders throughout the business value chain. The policy also encourages suppliers and business partners to adopt and apply the human rights policy to their operations.

The Human Rights Policy addresses non-discrimination practice, human rights violations against stakeholders, human rights risk assessment and due diligence, human rights promotion, human rights communication, and reporting of human rights violations.

WHAUP communicates on human rights to all new employees as part of new employee induction program. The Company plans to communicate human rights policy with all employees through activities and communication channels in 2020 to ensure all employees are aware of and understand human rights.

Whistle Blowing

WHAUP opens up to employees' suggestions and concerns to improve the Company's performance. WHAUP has developed a whistle blowing process with a mechanism to protect the whistle blower. All information about the whistleblower is kept confidential and will be limited to those involved in the investigation process. The reported case will be proceeded according to whistle blowing procedure. There was no reported concerns in 2019 from all WHAUP's operations.

Community Development

WHAUP commits to operate the business with consideration of social responsibility. The Company recognizes that its business decisions and activities create impacts to the surrounding community and environment. This is especially sharing water resource with communities in the Eastern Thailand region. To ensure the business grows sustainably while creating positive impacts to the local communities, WHAUP allocated both human resources and corporate social responsibility (CSR) budget to ensure the business effectively creates values to the communities.

Over the years, WHAUP has been actively participating WHA Group's various corporate social responsibility activities that represent the Group's commitment to sustainability. WHA Group conducts development programs to respond to communities' needs and help them grow in a sustainable manner. This was done through WHA Group's Environmental Impact Assessment (EIA) and regular social engagements, such as community visits of which feedback is used to establish suitable environmental and social programs. Apart from EIA, WHAUP takes part in WHA CSR committees to regularly engage with the local communities around WHA's industrial estates and other operations in order to identify communities' needs, and create programs and initiatives to accommodate them.

WHAUP allocates an annual budget to ensure that the social activities it has committed to will be realized in line with the UN Sustainable Development Goals. In 2019, the Company allocated a total CSR budget of 22.27 million Baht or 1.2% of its revenue to WHA Group; and 657 staff working hours to participate in WHA Group CSR activities. Apart from monetary contributions, WHA Group has appointed CSR committees in each business hub to engage proactively with the local communities around its industrial estates. WHA Group has also set Community Engagement Level goal to reach out to more than 97% of communities in the vicinity. The Group achieved this goal in 2019 by engaging with a total of 131 out of 133 villages in Rayong, Chonburi and Saraburi. The 3 pillars of sustainable community

development programs are Educational Development, Environmental Conversation & Sharing, and Social and Healthcare. Its community engagement goal for 2020 remains unchanged at 97%.

WHA Group CSR programs have evolved and formed today's WHA Corporate CSR theme which focuses on three pillars: Environment, Education, and Community. The Corporate CSR theme is used to guide the CSR Committee and WHA Group's operations to establish various environmental and social programs such as "Clean Water for Planet" and "WHA Art Camps" for both students and school teachers. These two annual programs have become the Group's most distinguished CSR programs. In addition, WHA Group also conducts programs to promote education and community health through school donations, student scholarships under the Dual Vocational Education (DVE), health check-ups and sports sponsorships in collaboration with local entities. The 2019 CSR programs and activities have been implemented to cover 100% of WHA's industrial estates and benefit up to 182,054 people from the neighboring communities.



Caring for the Environment

Clean Water for Planet



One of WHAUP's main business is water and the Company's water business operations are located in the water catchment area of the two main reservoirs, Nong Pla Lai and Dokkrai reservoir, which are the main water sources for communities and business operations in the provinces of Rayong and Chonburi.

Apart from managing a robust and effective water management system in WHA industrial estates to ensure its compliance, WHAUP collaborates with WHA Group and engages with local communities around the industrial estates to identify local issues that the Company can help resolve. Water quality has been one of the community's main concerns.

In line with this, WHA Group initiated its "Clean Water for Planet" program in late 2016 to improve water quality around WHA industrial estates and to raise awareness on water resource conservation. The program also improves local people's quality of living by promoting access to clean water, educating students and community members on water conservation and wastewater management, and collaborating with Chulalongkorn University to be a "learning center" for environmental engineering students.

This began with WHA Group's investment in R&D programs and Company's management and expertise, and collaboration with Chulalongkorn University and Laem Chabang Municipality for technical knowledge sharing.



Wastewater Management and Treatment Project under "Clean Water for Planet" at Pluak Daeng Sub-district located nearby Eastern Seaboard Industrial Estate (Rayong)



Today, WHAUP and WHA ID (WHA Industrial Development) are implementing the highly successful Clean Water for Planet initiative for safer and greener business operations. WHAUP uses its experience and expertise to provide wastewater services to manufacturers located within WHA industrial estates and local communities, so that their treated wastewater can be safely recycled.

Constructed Wetland Water Treatment Facility

One of the most significant achievements in 2019 was the completion of a wastewater management and treatment facility which was delivered to Pluak Daeng Sub-District Office in Rayong Province.

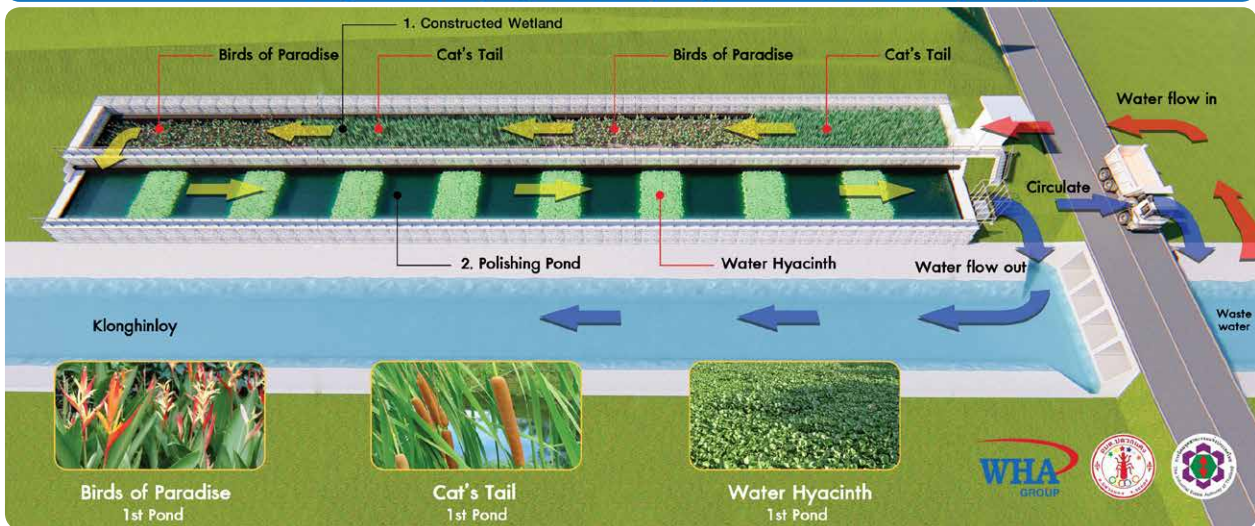
The Clean Water for Planet project was initiated by WHA Group following an investigation of the water available to the public around its industrial estates. As a result, the Group cooperated with the Pluak Daeng Sub District Organization to improve the quality of water in other areas.

This was followed by another joint effort to build a constructed wetland system, inspired by and adapted from HM King Bhumibol's experiments in biological wastewater treatment method. The project aimed to demonstrate the application of simple wastewater treatment method and to raise awareness and develop better understanding of water quality restoration among communities in a sustainable method.



Constructed Wetland System

for Pluak Daeng district, Rayong with a Capacity of 400 Cubic Meters per Day



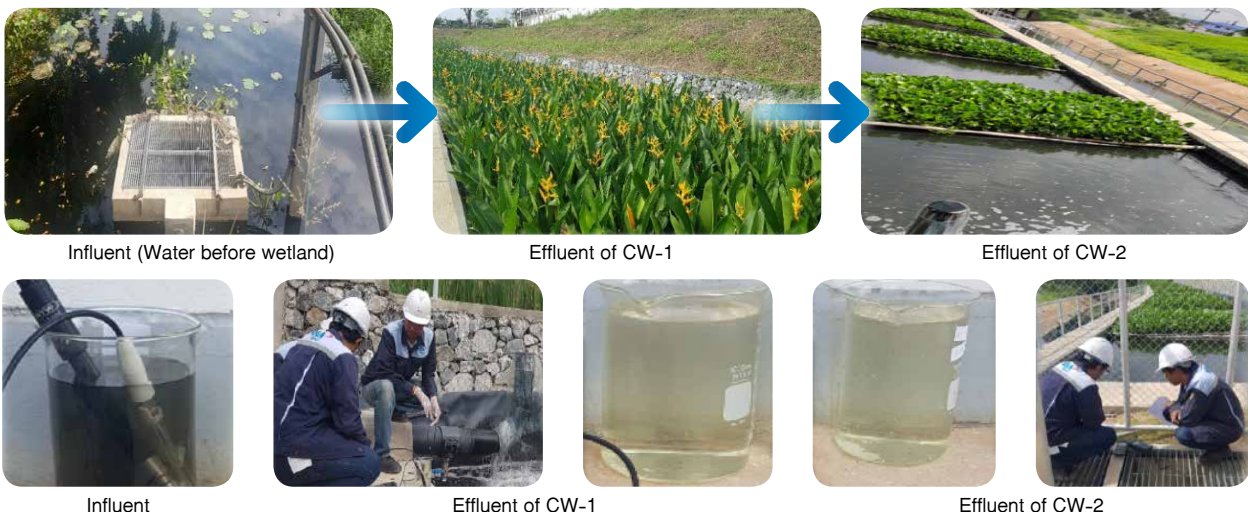
The facility consists of two constructed wetland systems, considered a natural technology that is eco-friendly, cost effective and easy to maintain. In the first system, ¾ inch-crushed gravel is laid on the ground to form a 50 cm thick layer that collects wastewater from Pluak Daeng communities. Aside from filtering sediment, it also serves as a protection for bacteria that consumes organic elements in the wastewater. The facility is surrounded by well-selected plants including cat's tail and birds of paradise that help absorb nitrogen and phosphorus in the wastewater. The second system uses water hyacinths that oxygenate the wastewater, while reducing nitrogen and phosphorus level.

The constructed wetland has a capacity of 146,000 cubic meters per year, allowing a reduction of organic compound by 80%. WHA Group follows up the project's results by constantly testing the water quality and conducting a community satisfaction survey. This resulted in improved water quality in the Hinloy canal which runs through the

Pluak Daeng community. This project has taught the local community about simple wastewater treatment methods that other local authorities can apply to other water sources, which contributed to the SDG no.6 Clean Water and Sanitation and no.9 Industries, Innovation and Infrastructure. The project also reduces complaints related to water pollution, even though the problems do not stem from the company's operations.

For this project, WHA Group contributed technical and engineering knowhow, along with over 4.49 million Baht in financial support and 970 staff working hours. The project benefits approximately 4,000 individuals, 220 apartments, 125 houses, and 30 local markets in the Pluak Daeng community. The constructed wetland system allows a reduction of organic compound by 80%, plus cost and energy savings. It is an environment-friendly solution that provides natural green surroundings for the community.

Performance monitoring of constructed wetland



Environmental Awareness Program



For WHA Group, taking care of the environment is the way forward. The Group believes that giving community members the opportunity to join activities is an excellent way to raise their awareness on environmental concerns and teach them to respect nature.

Every year, leaders, representatives and villagers from 15 communities around WHA Industrial Estates in Rayong and Chonburi are invited for educational visits to different ecological projects. The fun-filled outings aim to foster the local communities' appreciation for nature and provide them a better understanding of the environment. WHA Group's annual programs also promote collaboration of local governments, public and private organizations and individuals in protecting the environment and promoting biodiversity in local areas. Participants are given hands-on experience through ecological restoration activities such as coral planting with the use of artificial coral plant beds, releasing baby nurse sharks into the sea, tree planting, rehabilitating mangrove forests, etc. In 2019, WHA Group conducted 5 tree planting projects with 5 communities.

Promoting Education



WHA Art Camps

WHA Group has been hosting art camp activities for 11 years. The objective is to raise awareness among schoolchildren about their role in protecting local culture and environment whilst developing the children's creativity, freedom of expression and communication skills. In 2019, WHA Group held 3 art camps in Chonburi and Rayong to instill art appreciation and teach different basic art techniques, for example, watercolor, colored pencils and pastels, with "Clean Water for Planet" as its theme. In 2019, a total number of 635 students and 38 teachers from 35 schools around the WHA Industrial estates participated to express their feelings and creativity through art. The art camps include:



Art Camp for Teachers

Art Camp for Teachers is a program to train educators to impart a love for art to their young students. Using watercolor, crayons, pastels and colored pencils for paintings, sketches and drawings, the teachers learn basic art techniques. WHA Group firmly believes that by developing art appreciation for schoolteachers, art awareness and skills can be passed on to the children to help boost confidence and increase the chances of success in the future. The participant satisfaction survey, taken among 38 teachers from 16 schools during the 2019 Art Camp, showed that 92% of them were satisfied with the program.

Art Camp at Hometown

Art Camp at Hometown focuses on developing students' interest in the arts to use their creativity in a productive manner. Moderated by the team from InspireSight, an organization dedicated to bringing art, culture and history to different communities, the all-day event includes character-

building games designed to boost self-esteem and teach the youth to live in harmony within the community. With a special theme revolving around the community and nature, students from Prathom 4 - 6 unleash their inner artistry through brushes and paints while reflecting on their role in protecting the environment.

According to the 2019 survey taken by 617 students from 20 schools, 90% were happy to join the program. The majority felt that the project enhanced their basic art skills, and that the knowledge gained can be useful for their everyday life.

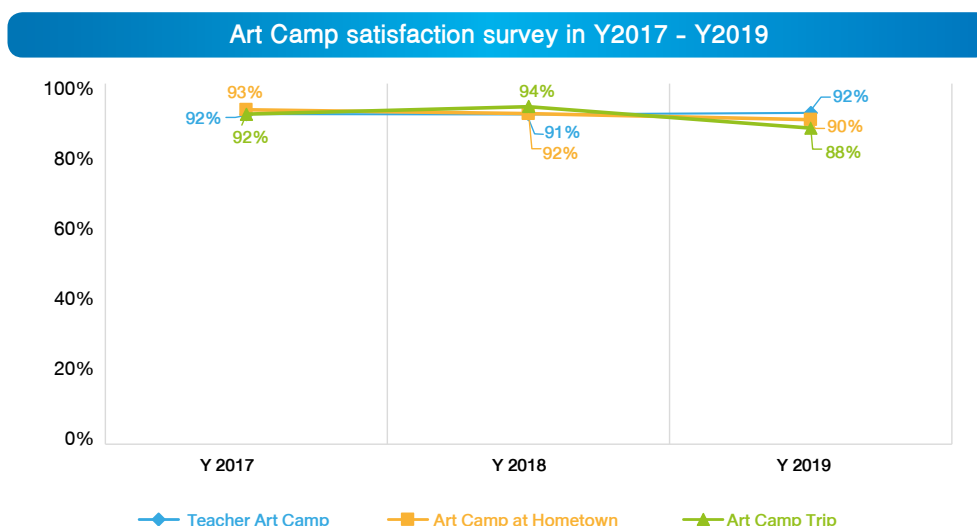
One of the participants in the 2017 Art Camp at Hometown program, Ms Chanida Poochurtsai, showed off her artistic talent in the 69th National Students' Arts and Crafts Competition 2019 organized by the Ministry of Education. "Nong Cake" proudly went home with the grand prize in the Prathom 1-6 level of Physically Challenged Student Category.

Art Camp Trip

The annual Art Camp Trip is organized to give Matthayom 1-3 students the opportunity to explore nearby historical and cultural sites, and to integrate this with art concepts. Children from schools in Rayong and Chonburi are given introductory lessons on art composition, watercolor and still life painting. To combine theory and practice, they visit places such as the wastewater treatment lagoon in WHA Chonburi Industrial Estate or the Nong Kho reservoir, and discuss the concept of protecting natural resources to promote sustainability in their community. They also visit a cultural or religious site where they can express themselves through visual art, while connecting and identifying with their cultural identities.

The satisfaction survey of the 2019 Art Camp Trip reported that 88% of 35 participating students from 9 schools were satisfied with the program.

The Art Camp trip has always been well-received by local schools in Rayong and Chonburi. The program has achieved its goal of supporting education among Thai youth through art. The graph below shows the satisfaction metrics for all Art Camp activities in 2017-2019.



WHA Supports Local Schools

WHA Group sees the importance of education as one of the key factors to improve socio-economic development and uplift people from poverty. To lend its support to local schools in neighboring communities, an annual school contribution program was established. Now on its 23rd year, WHA Group management and staff participate in this program to enhance education for the youth in 67 educational institutions, and to support a wide range of learning activities including academics, sports, art, music and social development.

In 2019, WHA contributed a total value of 3,307,700 Baht for this initiative, benefitting over 20,000 young students, in collaboration with over 50 companies located in the WHA industrial estates.



For vocational college and university students, WHA supports the Dual Vocational Education (DVE) initiative, created by the Office of Vocational Education, allowing students to get on-the-job training along with theoretical education. For the last 9 years, in cooperation with Ban Khai Technical College in Rayong, WHA gives full scholarships plus allowances to smart, disadvantaged undergraduates, and helps them find on-the-job training opportunities among customers in its industrial estates.

WHA is extremely proud of the 65 students who have won scholarship grants, and the 1,850 who have participated in the DVE program since it started almost 25 years ago. The WHA Human Resource Development Plan continues to help the youth acquire in-demand technical skills and core competencies to secure jobs of the future.

Supporting Our Community

Community Healthcare



Thailand is facing the aging population issue, similar to the global population trend. As part of WHA Group's commitment to promote community health and wellbeing, the Group set up a preventative healthcare program providing 800 complimentary flu shots to senior citizens in Chonburi and Rayong provinces. Visits are held in February and June, prior to the rainy season, to boost the immune system of the elderly. Apart from providing influenza vaccinations, the company also collaborates with the Rayong Provincial Red Cross Chapter for quarterly blood donation activities at the WHA Eastern Industrial Estate (WHA EIE) and Eastern Seaboard Industrial Estate (Rayong). This activity consistently attracts numerous donors from WHA's stakeholders such as WHA employees, customers, local government officers and local residents. A significant amount of blood is collected each time to help protect blood supply and save precious lives.



Community Visits



In 2019, WHA Group arranged a 2-day community visit for 25 WHA Group management and staff members, representatives of Rayong and Chonburi authorities, from 17 communities and 81 members of neighboring communities, as part of WHA Group's stakeholder engagement program. The study was at E:mc^2, the first real-time environmental monitoring unit at Eastern Seaboard Industrial Estate (Rayong) the center offers real-time processing of environmental reports, with highly reliable and accountable methodology and transparency policy. E:mc^2 also provides multiple electronic channels for environmental complaints and feedback. During the visit to Toei Ngam Beach, Sattahip Naval Base in Chonburi province, participants joined eye-opening environmental activities such as releasing baby nurse sharks back into sea and planting coral using artificial plant beds. These actions aim to help restore the biodiversity of the ocean and strengthen the bonds between WHA Group, local governments and community members.



2017 ➡ 83%

2018 ➡ 85%

2019 ➡ 85%

The satisfaction survey reported that 85% of the participants were satisfied with the trip.

The annual activity helps explain to the community members the way WHA Group operates its businesses. The hands-on knowledge and experience gained throughout the program enable the local leaders to find the appropriate approach for a more sustainable community. The satisfaction survey for the trips in 2017-2019 scored the following:

Sports Sponsorships



Chonburi, one of WHA Group's key operation areas, is proud of its local football team, Chonburi Football Club (Chonburi FC). WHA Group has been supporting this popular Club for 12 consecutive years as part of its community engagement program and to promote youth advancement through sports. Furthermore, WHA Group also encourages sportsmanship among employees by sponsoring the 21/9th WHA-Pattana Industrial Football Cup for employees in the Eastern Economic Corridor industrial estates. The objective of the activity is to encourage solidarity and camaraderie among sports enthusiasts.

Other sports teams that benefit from WHA Group's staunch support are the Pluak Daeng Rayong United Football Club, the Rayong Football Club and Bankhai United Football Club.





ENVIRONMENT

- Environmental and Impact Management
- Water Management
- Climate Change and Energy Management



Environmental Impact Management

WHAUP is aware of the necessity of environmental management and resource conservation to ensure the business is conducted in a sustainable and responsible manner while avoid causing any negative impacts towards the environment and local communities. With this purpose, WHAUP actively manages, monitors and works towards reducing its environmental footprint while implementing initiatives and projects that are in line with WHA Group's Environment Policy, and complying with regulatory standards and requirements.

WHAUP is aware that environmental impacts from effluents, waste, emissions, and water conservation are all high priority issues for its operations. These environmental issues may lead to impacts on the Company's business as well as to its stakeholders, including customers, suppliers and local communities.

WHAUP therefore commits to drive sustainable practice throughout its business operations as guided in WHA Group's Environmental and Quality Policy, which was endorsed by the Vice Chairman of the Board. The Policy provides a guideline for environmental management that is consistent throughout across WHA Group's business hubs, and conveys the commitment to prevent and minimize environmental impacts whilst continue to improve environmental and quality management to conserve the environment. The Policy also ensures that all business activities are in line with both international standards including, ISO 14001 and ISO 9001:2015 certification, and abides with the local regulations and laws. For Solar business, WHAUP has conducted a Code of Practice (CoP)

for the solar operations whose capacity ranges between 1 - 5 MW to ensure that the operations will not impact negatively on the environment and also surrounding communities. The Company also arranges public participation session to survey community concerns and ensure that the project is approved by stakeholders before the project installation.

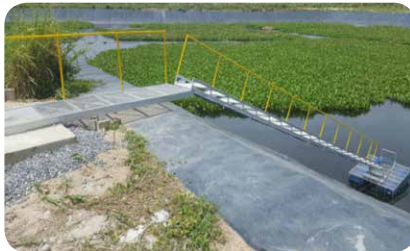
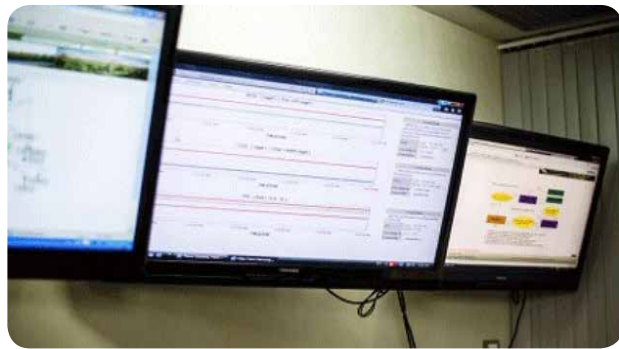
Environmental Impact Assessment

Although WHAUP does not conduct own Environmental Impact Assessment study, WHAUP complies with an Environmental Impact Assessment (EIA) study conducted by WHA ID as WHAUP's premises are located in WHA industrial estates. WHAUP also ensures that all operations comply with any applicable laws, rules, and regulations, as well as minimizes business impact on the environment.

According to WHA Group's procedures, WHAUP monitors all environmental performances in relation to the preventive measures, corrective actions and mitigation measures that are prescribed under the EIA requirements. WHA ID incorporated EIA Monitoring Report and submitted to the Industrial Estate of Authority of Thailand, Natural Resources and Environmental Policy and Planning, local provincial Offices for Natural Resources and Environment, local provincial Offices for Ministry of Industry and other relevant Department of Local Administration every 6 months. To ensure compliance with EIA, WHAUP monitors relating environmental management performance which are water and effluents quality.



Target
100% EIA Compliance



Real-time Water Quality Monitoring Station (WQMS)

WHAUP monitors the treated wastewater quality such as organic substances, COD and BOD, PH, Conductivity, Nitrate, Total Suspended Solids and Total Dissolved Solids parameters through Real-time Water Quality Monitoring Station or WQMS. The monitoring system is part of WHA Group's Environmental Monitoring Control Center (EMCC) to ensure that the water quality of all wastewater treatment plants comply with the standards prior to discharging into natural water sources. The WQMS system also connected to the government system for real-time reporting of the discharge quality. Any non-compliance with regulatory standards will generate an alert signal to inform relevant operators for immediate actions to pump and retreat until compliance is met.

Environmental Complaint Handling Process

WHA Group pursues business operations with emphasis on environmental management that abides with the EIA requirements and the ISO14001:2015 standards. With this, the Company is open to receiving any suggestions or complaints that stakeholders have from the Company's operational activities such as water withdrawal or discharged water. Complaint cases can be reported via telephone, WHAUP's website, through employees or directly to the Complaint Centre that is situated at every industrial estates managed by WHA Group.

Waste Management

One of the global environmental issue is waste. The amount of waste and the incorrect waste disposal has

affected plants, wildlife, and people. WHAUP business operations produce waste from two main sources: operational process and office waste and these waste accounts. WHAUP aware of this environmental footprint it generates. Thus, the company put efforts to good waste management approaches to minimize the impacts on the environment and communities. To ensure that all waste generated by WHAUP, both hazardous and non-hazardous, is properly managed, WHAUP strictly complies with all related regulations and Environmental Impact Assessment requirement together with the group's Environmental Management Policy.

Non – hazardous waste

There are 2 type of non-hazardous waste generated by WHAUP. One is the general waste which is mainly generated from office activities. Another is an industrial waste from water production and water treatment or sludge.

In 2019, WHAUP produced 4.54 tons of general waste of which 2.85 tons are disposed to the modern sanitary landfill and 1.69 tons are stored at the operation sites. To ensure that these wastes are properly managed, WHAUP has coordinated with an authorized waste disposal contractor- Waste Management Siam and implemented a waste tracking system.



Target 2022

- Reduce 1,000 tons of water sludge to landfill
- Reduce 50% of hazardous waste to landfill

To manage sludge from operation processes, WHAUP placed dewatering sludge machine to reduce 15% by weight of total sludge from water treatment process which weighted 4,424 tons in 2019 and conducted the research of sludge utilization to reduce the water sludge to landfill. WHAUP sets target to reduce 1,000 tons of sludge waste by 2022. To achieve the target, the Company has conducted study to compost water sludge by mixing the sludge waste and water hyacinth and other plants to produce compost. The research was under quality test process during the end of 2019.

Hazardous waste

Hazardous waste produced by WHAUP are mainly contaminated chemical containers from water production. In 2019, WHAUP generated 1.4 tons of hazardous waste of which 0.4 ton was kept onsite and 1 ton of the waste was sent to landfill. To ensure the reduction of hazardous waste, WHAUP sets target to reduce 50% of current hazardous waste by 2022. One of the approach the Company is considering is to have the chemicals delivered in bulk on operation site to reduce the amount of contaminated containers.

Waste reduction initiatives

To achieve the target of waste reduction at up to 1,000 tons per year within 3 years compared to previous year, WHAUP participated WHA Group programs such as E-Paperless program, Plastic Waste Reduction program, and Sort N' Save Project. The initiatives not only support the Group's intention in waste reduction but also help the Company reduce operational cost and GHG emissions.

E-Paperless

WHA Group used a large amount of paper and spent high cost on printing office document, especially meeting

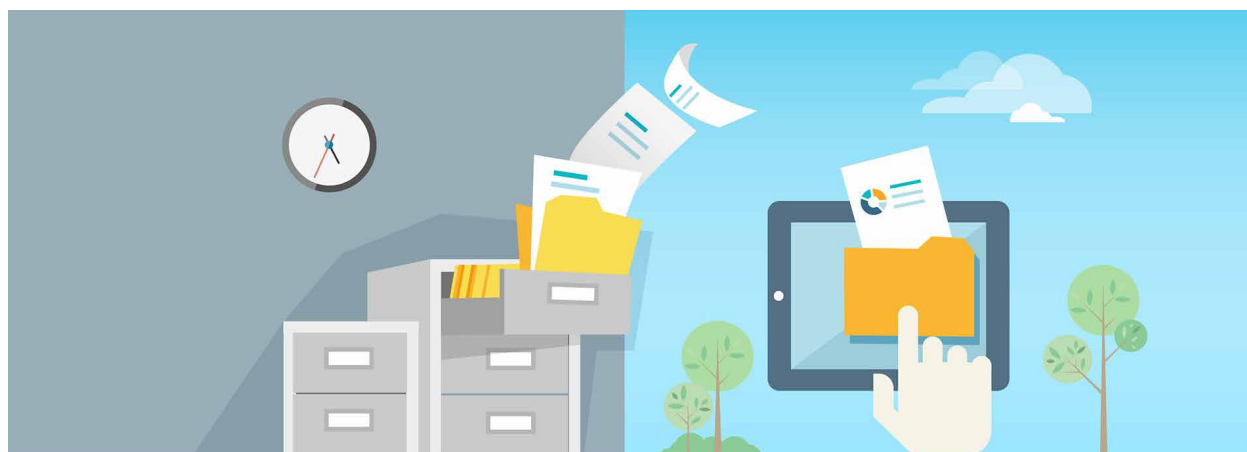
materials and office files. To minimize both paper resource and administration cost, WHA Group initiated the E-Paperless program and set the reduction target of paper use at 25% by 2022 to align with WHA Group's digital transformation goal. To support the reduction of paper, tablets were distributed to the management level to access and retrieve meeting documents from the newly developed document platform. In 2019, WHAUP can reduced GHG emissions around 534 kg CO₂e from saving 53,506 document papers which could cost 188,207 Baht of printing expense.

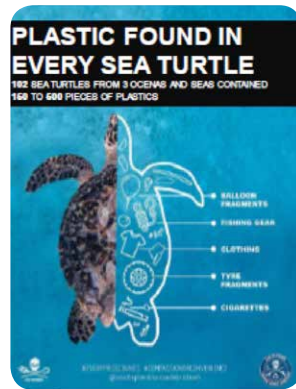
Plastic Waste Reduction

WHA Group is aware of the global ban of single-use plastic products as it causes severe impacts to wildlife and oceans. In October 2019, WHA Group stopped serving plastic bottled drinking water to its guests and visitors, therefore, were able to reduce 20,487 bottles of plastic waste and has set its 2020 target to save cost from purchasing plastic bottled water by 727,000 Baht.

Sort N' Save Project

The Sort N' Save project was initiated in 2019 by one of the winner groups under WHA Innovation Leader program. The objectives of this project are to increase environmental awareness amongst WHA Group's employees and to explore innovative business platforms under the circular economy concept. Over 4 months into the project implementation, the project team has not only set up centralized recycling facilities at two office buildings, but has also launched numerous campaigns to increase awareness and enhance employees' behavior towards recycling and waste reduction. These campaigns were conducted via multiple communication tools such as posters, bulletin board, Line application and email. The project received great performance in 2019 as office recycling rate increased approximately by 50%.





ระยะเวลาการย่อยสลายของวัสดุแต่ละประเภท			
กระดาษ 1-5 ปี	พลาสติก 2-5 ปี	โลหะ 3-14 ปี	พลาสติกแข็ง 80-100 ปี
อาหาร 6 ปี	กระดาษ 1 ปี	พลาสติกแข็ง 5 ปี	พลาสติกแข็ง 25-40 ปี
ไม้ 13 ปี	พลาสติก 15 ปี	พลาสติกแข็ง 100 ปี	พลาสติกแข็ง 450 ปี
พลาสติก 450 ปี	พลาสติก 450 ปี	พลาสติก 450 ปี	พลาสติก 450 ปี



สวัสดิ์ตะ ทุกท่าน

พวกเราทีม Sort N' Save ขอขอบคุณทุกท่านเป็นอย่างสูงที่ให้การสนับสนุนการแยกขยะเป็นอย่างดี หากมีความผิดพลาดหรือความสับสนประการใด เนื่องจากคำอธิบายที่ไม่ชัดเจน การใช้งานอุปกรณ์ที่ไม่สะดวก ฯลฯ ทีมงานขออภัยรับไว้และจะนำคำแนะนำที่ได้รับจากทุกท่านไปปรับปรุงเพื่อให้การแยกขยะของออฟฟิศเราดียิ่งขึ้นไปได้



ชาย

ถังที่ 1 ขยะที่ Recycle ได้

(สะอาด - มีฉลากรับซื้อ)

เป้าหมายคือ การหมุนเวียนนำกลับมาใช้ใหม่ (เป็นของมีค่า)

หลายครั้งมีความเข้าใจที่ไม่ถูกต้องว่าถึงเรา จะคัดแยกไปอย่างดีที่สุดท้ายรถขยะก็นำไปเทผสมกัน ซึ่งในความเป็นจริงขยะ Recycle เช่น ขวด/แก้ว/ถุง พลาสติก หากได้รับการคัดแยกอย่างเหมาะสมจะมีผู้รับซื้อต่อเพื่อนำไป Recycle ดังนั้นการไม่คัดแยกหรือทำให้ขยะกลุ่มนี้สกปรกจึงเป็นการทำลายโอกาสการ Recycle ลงไปอย่างน่าเสียดาย



ลด

ถังที่ 2 ขยะที่ Recycle ไม่ได้

(สกปรก - ไม่มีฉลากรับซื้อ)

ปลายทางคือ ที่ถมขยะ

(ควรลดขยะกันนี้ให้เหลือน้อยที่สุด)

เราทุกคนสามารถช่วยกันเปลี่ยนชะตากรรมของขยะในถังนี้บางส่วน เช่น ถุงหรือกล่องพลาสติกที่ปนเปื้อนเนื่องจากใช้บรรจุอาหาร แต่แท้จริงแล้วเป็นขยะประเภทสามารถ Recycle ได้ด้วยการล้างทำความสะอาด รวมถึงการรณรงค์ช่วยกันใช้ถุงผ้าและภาชนะบรรจุอาหารเพื่อลดปริมาณขยะที่จะไปกองอยู่ที่บ่อขยะได้ค่ะ



ปุย

ถังที่ 3 เศษอาหาร

(สามารถแปรรูปได้)

เป้าหมายคือ การนำไปทำปุ๋ยอินทรีย์

ทีมงานพบว่ามีบางท่านอาจยังเผลอนำถุงพลาสติกมาทิ้งพร้อมกับเศษอาหาร ทีมงานจึงขอความร่วมมือให้นำถุงพลาสติกไปทิ้งที่ถังข้าง ๆ ตามประเภทที่เหมาะสมซึ่งเศษอาหารในถังนี้ทางทีมงานจะหาทางเพื่อนำไปทำปุ๋ยอินทรีย์ต่อไปได้



By Sort n' Save, WHA Innovation Leader Group 11

In October 2019, "The 5-Day Challenge with Sort N' Save" was initiated to increase the employees' environmental awareness across the 4 business hubs. The campaign encouraged the participants to take a creative selfie of themselves with assigned eco-friendly items to earn a daily cash prize. The campaign received an overwhelming response rate with 98 pictures submitted as well as positive feedbacks.

The Sort N' Save project also targets to reduce the use of single-use plastic and foam. WHA Group distributed cloth bags and water tumblers to all employees to replace single-use plastics cups and bottles. In 2019, the Group collaborated with a local community office to give out cloth bags to 50 households in Khao-Khan Song sub-district, Chonburi province. Additionally, WHA Group also conducted training programs to raise the community members' awareness on the impacts of single-use plastics and foam containers, and provided guidance on appropriate behaviors to help reduce environmental impacts. In 2019, the training program was conducted at Chompon-Chaopraya sub-district in Rayong for 50 students and 75 students in WHASIL zone.

WHA CIRCULAR community

5-Day Challenge with Sort n' Save

Take your most **creative selfie** with these cool eco-friendly items to win great prizes.

It's simple!!! Add and send a photo to Line **WHA/Circular** or scan QR

1ST MISSION
28 OCT
Reusable Straw
 Cash Rewards **500 X 3**
 + Consolation Prizes

2nd MISSION
29 OCT
Reusable Bags
 Cash Rewards **500 X 5**
 + Consolation Prizes

3rd MISSION
30 OCT
Personal Tumbler
 Cash Rewards **500 X 5**
 + Consolation Prizes

4th MISSION
31 OCT
Lunch Box
 Cash Rewards **500 X 5**
 + Consolation Prizes

The Winners of the Last Challenge

How to live in eco-friendly way

- Love the earth
- Reduce and refrain from using plastic
- Use reusable items
- Everyone can save this beautiful world

Start with ourselves, "Two principles"

1. **Change of mindset** - Everyone can contribute in solving the world environmental problem
2. **Change of behavior** - switch to portable food container, personal tumbler, stainless straw and cloth bag

#In Work We Trust

Who kill Prasert?

A. **Stainless Straw** is reusable
 B. Carry **cloth bag** instead of using a plastic bag when shopping at 7-11 or Department stores
 C. Receive a special discount from merchants for bringing own **personal tumbler**
 D. Use **food container** for fruits of the day
 E. **Plastic bag** damages our ecosystem and harms everyone's life

The Winners of the Last Challenge

In our daily life, we can help protecting the environment by start using the "Eco-friendly" items

- We use the "food container" instead of foam or plastic
- For beverages, we bring "personal tumbler" instead of using plastic glass, and receive extra discount from merchants
- We carry "reusable straw" with us everywhere
- At 7-11, we already have our own "cloth bag" so we do not need a single use plastic bag

Let's save our world for the next generation

"We would like to encourage everyone to stop using plastic and reduce waste in our daily life by choosing **organic brands** or **recyclable packaging**. Please also carry a **cloth bag**, avoid using single use plastic and bring your own **stainless straw**, **personal tumbler** and **food container**. Our simple effort will make this world a better place as well as help saving a lot of marine life"

#SaveTheWorldReducePlastic
 #WHA/CircularCommunity
 #SortnSave
 #WHAActivationLeader

For the special gifts from WHA executives, we will propose for their verdicts and will deliver the presents to the winners during 11-15 November 2019



The Sort N' Save project has set future plans and phases with larger scope targeting WHA Group's stakeholders namely, employees, business partners and communities.

 Employees	 <ul style="list-style-type: none"> • WHA Upcycling e.g. cloth bags, T-Shirt • Volunteer Activity e.g. beach cleaning day 	
 Business Partners	 <ul style="list-style-type: none"> • Green Warehouse Co-CSR • WHA Zero Waste Awards 	
 Community	 <ul style="list-style-type: none"> • WHA Sort n' Save School Project 	

Chonburi Clean Energy (CCE)

Generating alternative fuel from waste is an active and responsible way of waste management while also providing benefits to the business, community and wider environment. In 2019, WHAUP invested in a Waste-to-Energy Power Plant, known as Chonburi Clean Energy (CCE) project, along with two other renowned and committed shareholders: Glow Energy and SUEZ. This project is in line with Thailand's Alternative Energy Development Plan 2015 - 2036 which proposes a target to use 30% renewable or green energy of the total energy consumption by 2036.

CCE is an eco-friendly, advanced waste-to-energy power plant that is located at WHA Chonburi Industrial Estate 1, in Chonburi province, Thailand. The CCE's total project investment is approximately 1.8 billion THB. The power plant has a capacity to generate electricity by converting waste to energy source at 400 tons per day, or approximately

100,000 tons per year. This enables the maximum output of 8.63 MW of electricity. This power plant is equipped with the most advanced technologies in terms of reliability, sustainability, stability and environmental protection. It uses a safe and environmentally sustainable waste incineration technology and high standard air emission control systems. CCE is the first industrial waste to energy facility in Southeast Asia to meet European emission standards, which is more stringent compared to local standards.

The project's construction work began in late 2017 and was ready for commercial operation in November 7, 2019. During commissioning period from November to December 2019, air emission monitoring results obtained from the installed Continuous Emission Monitoring System (CEMS) portrayed that all parameters namely, Total Suspended Particulates (TSP), Nitrogen Dioxide, Sulfur Dioxide and Hydrochloric Acid, were in compliance with the EU standards.



Emission	Unit	EU Regulation	Japanese Regulation	Thai Regulation	CCE selected thresholds
		(Dry Gas 25°C, 7% O ₂)			
NO ₂	ppm	136.7	150	180	136
SO ₂	ppm	24.6	30	30	24
HF	ppm	1.6	-	-	1.6
HCL	ppm	8.6	25	25	8
Dioxins/Furan	Ng/Nm ³	0.13	0.13	0.1	0.1
Dust	Ng/Nm ³	12.9	24	70	12.9



Biodiversity

WHAUP always concerns that the Company's operations may cause impact to the biodiversity of the provinces the Company operates. WHAUP appreciates the importance of biodiversity that balances environment, supports ecosystems, and being a part of communities' life. The Company is also aware that its water withdrawal and discharge activities may affect the local water ecosystem. In addition, the Company's power supply business may also affect the surrounding ecosystem may be impacted by the project development and operating process. To ensure that biodiversity in the surrounding areas are protected, WHAUP applies the management approaches that are align with regulatory standards, the Environmental Impact Assessment (EIA), and WHA Group's Biodiversity policy.

Management approach towards biodiversity protection is defined in WHA Group's Biodiversity Policy. Additionally, WHA Industrial Development (WHA ID) also conducts Environmental Impact Assessment (EIA) to identify

any drivers that may cause changes or impacts to the surrounding biodiversity due to such intervention, and appropriate management approach were identified.

According to Environmental Impact Assessment (EIA) report of WHA ESIE 4 conducted by WHA ID, the industrial estate is located close to high biodiversity area and needs to comply with biodiversity protection measures including monitoring of nearby aquatic ecology twice a year during dry and rainy seasons. The project requires WHA ID to monitor biodiversity of 3 stations, 2 stations at Klong Noi, located 500 meters above project's discharge point and at water discharge point, and 1 station at Klong Champang, located 500 meters down from water discharge point to study potential impacts on aquatic ecology (biological resources) from water discharged from the industrial estate. WHAUP is directly responsible for wastewater treatment system of the industrial estate. To minimize the impact on the environment, the Company controls and ensures the quality of discharged water is in line with relevant laws and regulations.

Water Management



According to WHAUP's business, water is one of the main resource that the Company mainly uses to create income and revenue. The water scarcity may directly affect the company's business operation because of increasing demand of water use in both house hold and business sectors together with climate change impacts. Thus, good water management is necessary to avoid any conflicts with surrounding communities and ensure the business continuity. WHAUP commits to conserve and preserve water resources by promoting water reuse and recycling with proper quality to the customers and placing an importance of the effluent qualities which discharged from WHAUP's wastewater treatment plant. Besides, WHAUP strictly complies with regulations and standards to ensure that all of its operations will not cause adverse impacts on surrounding communities and environment.

The central industrial water supply and wastewater treatment facilities in all WHA Group's industrial estates are managed by WHAUP. WHAUP finds ways to minimize water withdrawal by recycling approach while also ensures the quality of discharged wastewater to prevent negative impacts to the environment.

As a basis for management, WHAUP manages water quality by strictly adhering to effluent standards as prescribed under the Ministry of Natural Resources and Environment, Effluent Standard for Industrial Factories, Industrial Estates and Industrial Zones, Industrial Estate Authority of Thailand Act, B.E. 2522 (1979) and Factory Act, B.E. 2535 (1992). This is done through regular monitoring of water related parameters as prescribed in Environmental Impact Assessment (EIA), and reporting the results to the Industrial Estate Authority of Thailand as well as to the Office of Natural Resources and Environmental Policy and Planning every 6 months.

In addition, the Company also conducts monthly sampling of wastewater generated from factories in the industrial estates to prevent any harmful contaminations to common water drainage, and to ensure that its central wastewater treatment system can operate at its full capacity.

Furthermore, WHAUP cooperates with stakeholders, namely nearby communities, for the synergy of water and environmental protection measures. The Company signed an MOU with Chulalongkorn University's Faculty of Engineering, Pluagdang Sub-District and Laemchabang Municipality during 2016 - 2018. From then on, the Company successfully initiated a corporate CSR program relevant to water conservation, known as "Clean Water for Planet", in 2016. This program is a long term commitment with full support from top executives from both WHAUP and WHA Group, with the ultimate goal to raise awareness and to develop a better understanding of environmental care among communities in a sustainable manner.

Water Supply

Water is a critical component to WHAUP business as it offers total solutions for industrial water procurement, wastewater treatment, and conventional power services to support the production process of manufacturers in WHA industrial estates. The Company procures and distributes all water supply in all WHA Group's industrial estates. Water is mainly procured from Eastern Water Resources Development and Management Public Company Limited from reservoirs that belong to the Royal Irrigation Department in Rayong province, Thailand. A small amount of water is also sourced from WHA Group's on-site water reservoirs.

The capacity of each on-site reservoir differs depending on the industrial estate that it situates, but the reservoir that has the highest storage capacity at 530,000 m3 is located in Eastern Seaboard Industrial Estate (Rayong). For industrial estates that do not have on-site reservoir due to certain limitations of the land, the sites are provided with Water Reclamation Plant that utilizes membrane technology to further treat wastewater from the wastewater treatment plant, and distributes the water to industrial users at a quality that is equivalent to the industrial water grade. Until now, WHAUP has the capability to reclaim wastewater to industrial users at 3.65 million cubic meters per year and is in the process of expansion to 11,000,000 cubic meter per

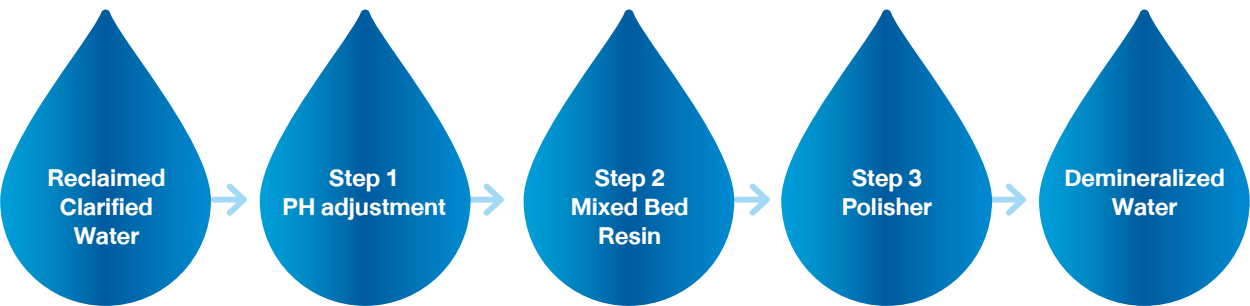
year by the end of 2020. This constitutes to 15% of total water resources needed in all industrial estates. In the case where water shortage is anticipated, WHAUP and WHA Industrial Development will hold a meeting with both its water suppliers and users to notify about the water situation, and cooperatively implement solutions to tackle the crisis.

In 2019, the ratio of water supplied from external source is reduced to 80% of the total water consumption. The other portion of water source is from WHA Group’s on-site reservoirs, 3R programs and Water Reclamation project.

Water Reclamation

In 2017, WHAUP started the first wastewater reclamation project in WHA Eastern Industrial Estate (Map Ta Phut), located in the Eastern Economic Corridor (ECC) of Thailand.

The wastewater reclamation plant has a treatment capacity of 7,500 m³ per day and has been expanded to another 2,500 m³ per day at the end of 2019. This expansion includes the addition of Micro Filtration (UF) and Reverse Osmosis (RO) membrane technologies that is utilized for treating industrial wastewater into clarified water. The clarified water has better quality than water that are produced from the conventional method of coagulation and sand filtration, and can be used in normal operations in many industries. In 2019, WHAUP advanced the reclamation project by introducing a water demineralization process at WHA EIE. This process further treats the reclaimed clarified water to high purity water, known as de-ionized water or demineralized water, by removing all minerals through ionic exchanger and polishers as depicted in the following process.



Step 1	Clarified water from the water reclamation project undergoes pH adjustment to be suitable for mineral removal to produce highest purity water.
Step 2	Mixed bed resin is a process to pass water through ionic exchangers to remove minerals
Step 3	Polisher is the final mineral removal process prior to distribution to customers to ensure the quality meets the requirements

With the implementation of the water reclamation process, the Group were able to reduce and minimize around 3.65 million m³ of total water withdrawal and water discharge in 2019.

In 2020, WHAUP plans to expand the capacity of water reclamation plants in EIE and ESIE (Rayong) by 15,000 m³ per day and 5,200 m³ per day, respectively.

Treatment Capacity

10,000

cubic meters per day

Membrane technology will help save and decrease wastewater discharge of around

3.65 million

cubic meters per year

Water Recycling

WHAUP recycles treated wastewater from the wastewater treatment plant for use within the industrial estates' common areas, such as, cleaning purposes or watering plants. This has reduced the amount of water withdrawals from external water sources by 2.8 million m³, or substituent to 3.68% of total water withdrawal.

Wastewater Treatment

WHAUP provides wastewater treatment and management services to manufacturers located in WHA's industrial estates in Thailand. Each industrial estate deploys a different wastewater treatment technology that is most suited for the customers' industrial activities, such as activated sludge system (AS), aerated lagoon system (AL), and the hybrid rotation biological contactor (Hybrid-RBC) system which is the combination of Rotation biological contractor (RBC) and Activated sludge (AS). Hybrid-RBC system can treat wastewater that contains higher organic loading rate from both suspended microorganisms in the activated sludge and biofilm on the rotational biological contractor when compared to other treatment methodologies. Additionally, Hybrid-RBC system can also increase aeration to the biofilm formed on RBC which results in greater wastewater treatment efficiency.

The Company ensures that used water by manufacturers meet the standards imposed by the Ministry of Industry before being discharged into the central wastewater treatment system of each industrial estate. This is carried out as the Company conducts sampling of the manufacturer's effluent once a month. Once used water are treated via WHAUP's central wastewater treatment system, water quality is thoroughly inspected against the Ministry of Natural Resources and Environment, Effluent Standard for Industrial Factories, Industrial Estates and Industrial Zones before being discharged into natural sources or recycled for other purposes, such as watering plants or

feed into the reclamation project. The monitoring results are presented to the Industrial Estate Authority of Thailand as an Environmental Impact Assessment (EIA) report once every 6 months. Based on the record of wastewater quality in 2019, all monitoring parameters were in compliance with the standards.

In addition to maintaining water quality within its facilities, WHA Group is aware to protect downstream water sources and the wider environment. This is conducted as the Company monitors the quality of nearby surface water bodies, located nearby the industrial estates, on a regular basis.

Constructed Wetland

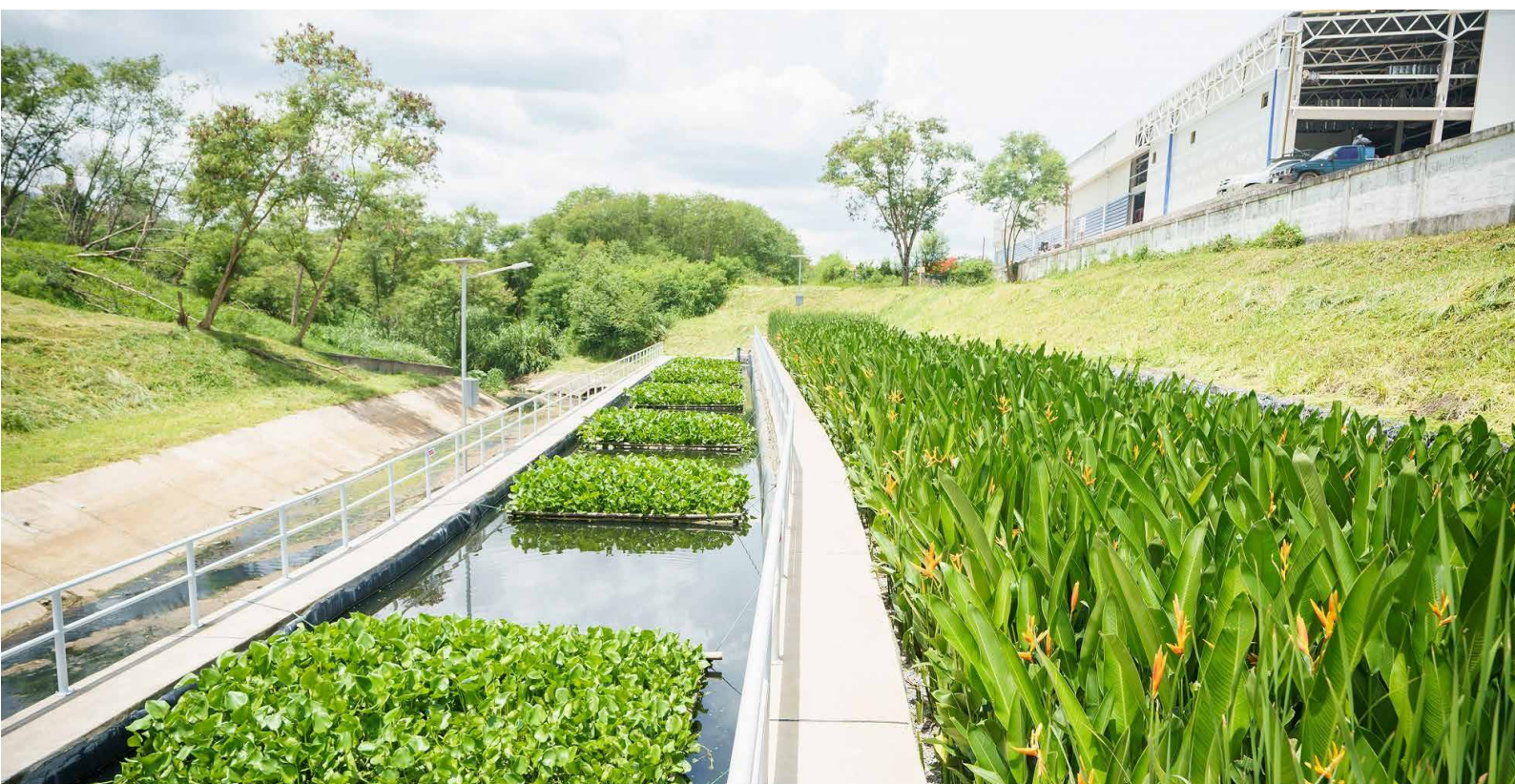
Since 2016, WHAUP collaborated with WHA Group and launched a Corporate CSR Project, known as "Clean Water for Planet". The main objective of this program is to raise awareness, create a better understanding and highlight the importance of water in order to instill a sense of responsibility among the community members to take care of their precious natural resource. The Project comprises three key activities:

- 1. Wastewater Training Program:** Set up a basic curriculums to train students and local governments to understand easily about wastewater treatment operations. The aim of this activity is to customize training programs for each local communities that may have wastewater treatment facility but cannot operate functionally.
- 2. Real Learning Center:** Provide field trainings for environmental internships to gain practical experiences with various types of wastewater treatment systems and to learn about the industrial environmental management.
- 3. Community Project:** Develop wastewater treatment utilities for communities that are nearby the industrial estate.

One of the most outstanding achievements to-date is the Wastewater Management and Treatment facility, located close to Eastern Seaboard Industrial Estate (ESIE), Rayong province, Thailand. This constructed wetland project is a natural technology that is eco-friendly, cost-effective, and is inspired by H.M. King Bhumibol Adulyadej in using biological plants and microorganisms to naturally treat the water quality. It treats surface water from upstream of Hin Loi Canal that passes through dense community areas. This constructed wetland, now completed, has a capacity of 400 m³ per day, allowing a reduction of organic compound by 80%. The natural technology consume less energy and could save up to 0.66 KWh/ m³ of energy or 0.38 kg CO₂e/ m³ of GHG emissions which is significantly lower than other types of conventional wastewater treatment systems. In 2019, WHA successfully delivered this facility to the Pluak Daeng Sub-district Administrative Organization in Rayong Province, Thailand. This pilot project will be an initial step to the implementation of other water conservation projects nationwide.



**reducing the country's
greenhouse gas at 20%**



Climate Change and Energy Management

Climate change is becoming a serious threat in a global scale as it leads to significant impacts to the environment, social and economic aspects. WHAUP recognizes such outcome as serious risk that may lead to business disruption if little actions are taken to prevent its occurrence. To tackle this challenge, the Company assesses and proposes mitigation measures for any risks that are imposed by climate change towards the Company's business and its customers. Furthermore, WHAUP strives to support the development of clean energy, contributing to meet Thailand's ratification of the Paris Agreement and Thailand's Nationally Determined Contribution Roadmap on Mitigation 2021-2030 with target of reducing the country's greenhouse gas at 20% by 2030.

The main GHG emissions source of WHAUP comes from the electricity (GHG Scope 2) used in water production and water treatment process. At the same time, an amount of insignificant direct emissions (GHG Scope 1) are generated from the Company's own diesel generators and vehicles.

To reduce the GHG emission scope 2, WHAUP plans to install solar energy system in WHA Group operations to reduce conventional grid electricity. WHAUP aims to increase solar power to double the current capacity within 3 years or by 2022.

WHAUP manages climate change risks by conducting risk assessment covering climate change impacts that may cause operational disruption. At the same time, the Company contributes to reduction of climate related impacts by promoting use of solar power within WHA Group and among the Group's customers.

Climate Related Risk Assessment

WHAUP conducts annual climate related risk assessment as part of Enterprise Risk Management to identify significant risks, evaluate the effectiveness of in-placed mitigation measures and determine additional measures to address the challenges imposed by climate change. The assessed risks consist of irradiation fluctuations, drought, and flood. The risks are reviewed every year and the actions or measures corresponding to the risk assessment results are tracked until completion.



Target 2030
Reducing the country's
greenhouse gas at 20%

Risks	Impacts	Implemented or Planned Mitigation Measure
Irradiation Fluctuations	Uncertain patterns of sunlight affects the performance and reliability of the solar power to become inconsistent.	Design the solar power system that supports both low light and overheat conditions and apply equipment such as Inverter and PV Panel to maximize electricity generation from solar panels.
Drought	Drought affects the availability of water for water withdrawal	WHAUP invests in reclamation projects to reduce raw water withdrawal. The Company also plans to expand water reclamation plants capacity.
Flood	Operational disruption and supply to customers	Water plants and facilities are constructed on higher ground. The industrial estates are constructed with sufficient water runoff drainages and perimeter flood dikes (where applicable) enclosed the industrial estate

Energy Management

WHA Group sets forth an Energy Conservation Policy that are adhered by all employees and facilities that are characterized as a 'Control Building' by the Building Control Act, B.E. 2540 (1997) and Promotion and Conservation of National Environmental Quality Act, No. 2, B.E. 2550 (2007). The Policy states that these buildings are to carry out energy conservation programs. As a part of WHA Group, WHAUP adopted the policy and took part in WHA Group's Energy Committee which was appointed in May 2019 to take proactive steps and oversee energy efficiency and conservation throughout WHA Group's business operations. The Energy Committee is composed of representatives from different departments of operation. There are 4 representatives from WHAUP who takes active roles in driving the energy conservation initiatives.



Energy Saving

Let's Save the World Together

WHA Group encourages all employees to save energy through "Let's Save the World Together" as the Group's energy saving program. All employees can participate the energy saving challenges such as turning-off electrical equipment when not in use, use stairs instead of elevators and adjust air-conditioners to appropriate temperatures. Apart from this, all lighting system in WHA Group's offices have been changed to LED types to support the Group's energy reduction intentions. Apart from this, WHA Group can control and conserve energy usage within the common areas of the industrial estate premises. WHA Group has been continuously implementing energy conservation measures for 5 years and were able to reduce electricity consumption by 1,147,467 kWh or equivalent to avoiding of 667.9 CO₂e tons of GHG emissions.

Let's Save the World Together

Computer	Turn off the computer during lunch break, after use or set automatic sleep mode
Switch	Switch off all lightings and appliances after use
Plug	Unplug all electric appliances after use
Air-conditioner	Set the temperature at 25-26 C°
Elevator	Use stair for low level floors and wait for your colleagues to take the elevator with you
Copy machine	Use recycle paper and print on both sides of the paper



Solar Energy

Many warehouses and industrial factories, both inside and outside of WHA Group's industrial estates, are portraying increased interest in solar energy. Solar rooftop installations are part of the renewable energy solutions that can lower operating cost while at the same time contribute to a better environment; avoiding GHG emissions from conventional electric power. WHAUP has been promoting use of solar power system through its service of solar rooftop installation for WHA Group's warehouses, customer's factories in industrial estates, carparks and data center.



Solar Energy in WHA Group

To support renewable energy and GHG emission reduction within WHA Group, WHAUP provides solar rooftop systems to WHA Group's facilities. The solar panels were installed in the WHA Group's Data Center and industrial estate facilities. For the Data Center rooftop, the solar panels generated 582 kW of energy and substituted about 15% of the grid electricity. The solar system was also installed in WHAEIE's water treatment plant. These installations generated 180,365 kWh of electricity, thus the avoided carbon emission was counted as 103 tons CO₂e. This also saved WHUP about 676,368 Baht from buying grid electricity. Besides, WHAUP is installing solar energy system with 368 kW energy generation in three of WHA Plaza's carparks. This project is scheduled for completion in 2020.

Promoting Use of Solar Energy in the Country

Apart from promotion of solar power in WHA Group, WHAUP also promotes solar energy to potential customers across Thailand. The company offers an all-in solar rooftop service package which covers full services of solar energy. This service includes permitting, design and engineering, construction and installation, as well as operation and maintenance throughout the contract period. With this offer, the solar rooftop projects were installed to 12 customers with capacity 9.3 MWp of solar power. The GHG Scope 2 emission is reduced by 199,950 tons CO₂e over solar panels lifetime, compared to conventional electricity consumption on grid system. Moreover, the clients' operation costs in electricity usage can be saved approximately 912,085 Baht by the end of 2019. Additionally, WHAUP is committed to support WHA Group's long-term target to provide solar power at 100 MW by 2022.

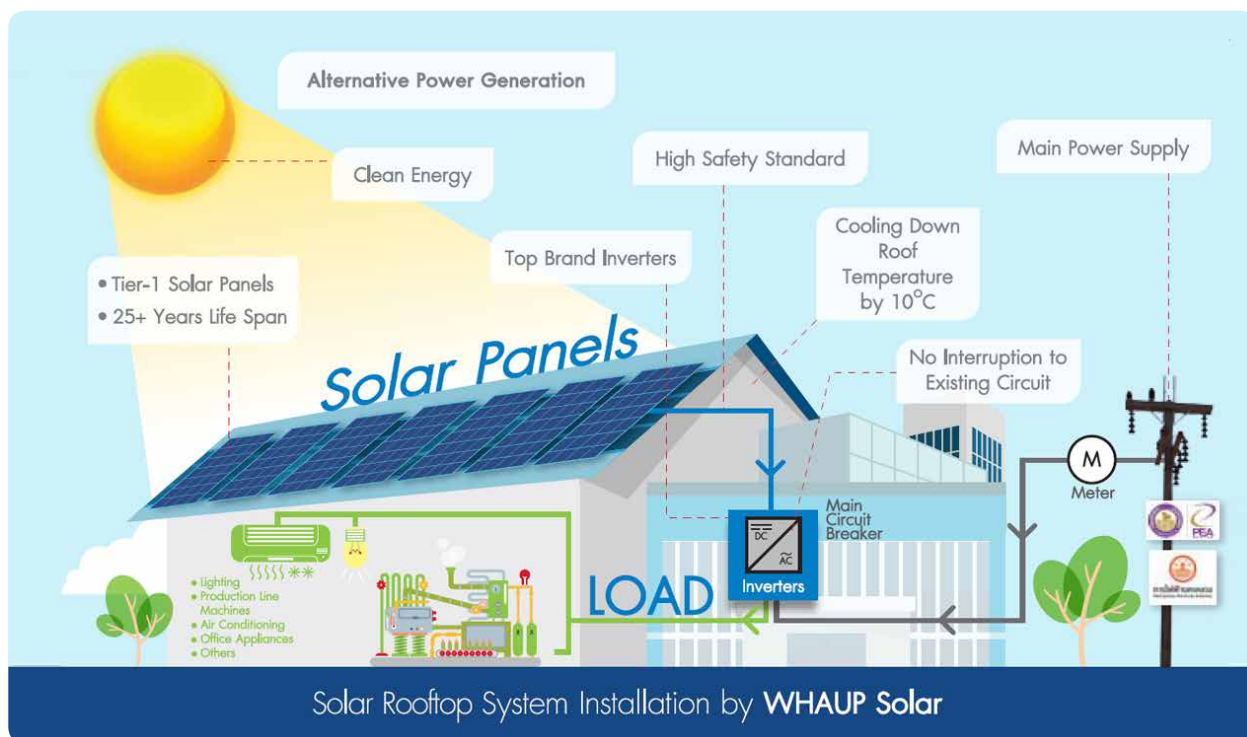


WHAUP is committed to support WHA Group's long-term target to provide solar power at 100 MW by 2022.



Year	Performance		Target	
	2019	2020	2021	2022
Installed Capacity (MW)	30.8	40	50	100
GHG Emission Reduction (tons CO ₂ e)* over solar panels lifetime (25 years)	662,200	860,000	1,075,000	2,150,000

*Estimated from carbon baseline of 0.56tCO₂/MWh announced by Thai Greenhouse Gas Management Organization



Thailand's Largest Solar Carpark

During late 2019, WHAUP signed a contract with SAIC Motor Company - CP Co., Ltd. to install a solar carpark facility on their manufacturing plant's car park. The project covers a total roof area of 31,000 square meters which provide shading for approximately 2,000 vehicles and generate a total electricity of 4 MW for the plant's consumption. This project is Thailand's largest solar carpark that will generate an average annual revenue of THB 20 million throughout the 20 year-contract.

WHAUP's fully-integrated service encompasses the entire project development processes throughout the contract period. Customers can fully rely on the expertise and professionalism of WHAUP's working team as they have long experience in providing energy and utility needs. This solar rooftop service will help customers save energy costs as well as to fulfill their environmental targets.



WHAUP Performance Summary

Economic Performance

GRI Standard	Performance	Unit	2016	2017	2018	2019
201-1	Direct economic value generated					
	Revenue	Million Baht	2,429.97	3,569.86	3,755.70	3,738.37
	Economic value distributed					
	Annual dividend payment	Million Baht	-	-	778.01	1,162.80
	Operating cost	Million Baht	926.96	1,067.51	1,088.31	1,127.08
	Employee expenses	Million Baht	49.28	72.11	91.63	106.37
	Tax	Million Baht	30.79	69.38	65.01	62.63
	Social investment	Million Baht	0.33	0.06	1.07	0.30
	Economic value retained	Million Baht	1,422.61	2,360.80	1,731.67	1,279.19
205-2	Communication and training on anti-corruption policy					
	Number of governance body members	%	-	-	75	100
	Number of employees	%	-	-	17	100
205-3	Confirmed incidents of corruption					
	Total number of confirmed incidents of corruption	Case	0	0	0	0
	Number of employees who were dismissed due to corruption	Person	0	0	0	0
	Total number of confirmed incidents when contracts with business partners were terminated or not renewed due to violations related to corruption	Case	0	0	0	0
	Public legal cases regarding corruption	Case	0	0	0	0

Social Performance

Employment

GRI Standard	Performance	Unit	2016		2017		2018		2019	
			Male	Female	Male	Female	Male	Female	Male	Female
102-8	Total number of employees	Persons	72		82		101		110	
	Number of employees by gender									
	Total number of employees by gender	Persons	64	8	68	14	83	18	92	18
	Permanent employees									
	Number of Permanent Employees by gender:	Persons	64	8	68	14	83	18	92	18
	Total number Permanent Employees:	Persons	72		82		101		110	
	Temporary employees									
	Number of Temporary employees by gender:	Persons	0	0	0	0	0	0	0	0
	Total number of Temporary employees:	Persons	0		0		0		0	
401-1	New Employee									
	Total new employee	Persons	14	3	5	8	17	4	19	1
		Persons	17		13		21		20	
	New hire rate	%	19.44	4.17	6.10	9.76	16.83	3.96	17.27	0.91
		%	23.61		15.85		20.79		18.18	
	New employee by age									
	Below 30 years old	Persons	5	0	2	1	9	2	12	0
		%	6.94	0.00	2.44	1.22	8.91	1.98	10.91	0.00
	30-50 years old	Persons	8	3	3	7	7	2	7	1
		%	11.11	4.17	3.66	8.54	6.93	1.98	6.36	0.91
	Over 50 years old	Persons	1	0	0	0	1	0	0	0
		%	1.39	0.00	0.00	0.00	0.99	0.00	0.00	0.00
	Employee turnover									
	Total employee turnover	Persons	3	3	2	3	3	1	11	1
		Persons	6		5		4		12	
	Turnover rate	%	4.17	4.17	2.44	3.66	2.97	0.99	10.00	0.91
		%	8.33		6.10		3.96		10.91	
	Employee turnover by age									
	Below 30 years old	Persons	0	1	1	1	0	0	5	0
		%	0.00	1.39	1.22	1.22	0.00	0.00	4.55	0.00
	30-50 years old	Persons	3	2	1	2	3	1	6	1
		%	4.17	2.78	1.22	2.44	2.97	0.99	5.45	0.91
	Over 50 years old	Persons	0	0	0	0	0	0	0	0
		%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRI Standard	Performance	Unit	2016		2017		2018		2019	
			Male	Female	Male	Female	Male	Female	Male	Female
404-1	Employee training									
	Total number of training hours provided to employees	Hours	1,910.00	230.00	1,419.50	253.50	1,474.10	121.90	1,346.50	408.00
		Hours	2,140		1,673		1,596		1,754.50	
	Average training hours	Hours	29.84	28.75	20.88	18.11	17.76	6.77	14.64	22.67
		Hours	29.72		20.40		15.80		15.95	
	Average training hours by level									
	Executives	Hours	224		470		280		306	
	Middle management	Hours	48		140		58		62	
	Staff	Hours	1,868		1,063		1,258		1,386.50	
404-3	Percentage of employee received performance review by level									
	Executives	%	100		100		100		100	
	Middle management	%	100		100		100		100	
	Staff	%	100		100		100		100	
405-1	Diversity of Director to executives level by age									
	Below 30 years old	Persons	20		19		28		34	
	30-50 years old	Persons	46		56		65		67	
	Over 50 years old	Persons	6		7		8		9	

Community Engagement

GRI Standard	Performance	Unit	2016	2017	2018	2019
413-1	Operations with community engagement					
	Total percentage of reporting operations involved with local community engagement	%	100	100	100	100

Occupational Health and Safety

GRI Standard	Performance	Unit	2016	2017	2018	2019
403-9	Lost time injury frequency rate (LTIFR)					
	Employee	Case per 1,000,000 hours worked	0	0	0	4.68
	Contractor	Case per 1,000,000 hours worked	0	0	0	0
	Fatalities					
	Employee	Person	0	0	0	0
	Contractor	Person	0	0	0	0

Environmental Performance

Materials

GRI Standard	Performance	Unit	2016	2017	2018	2019
301-1	Total renewable materials used					
	Water	Cubicmeter	31,038,308.00	33,542,602.00	15,989,684.20	21,180,879.88
301-2	Recycled input materials used					
	Percentage of recycled water used to manufacture the organization's primary products and services	%	2.86	2.78	4.99	3.89

Waste

GRI Standard	Performance	Unit	2016	2017	2018	2019
306-2	Waste by type and disposal method					
	Total waste	Tons	3,720.44	2,789.76	4,056.34	4,426.60
	Hazardous waste					
	Total hazardous waste	Tons	0.89	1.49	2.28	1.40
	Land-fill		0.76	1.29	1.64	1.00
	On-site storage	Tons	0.13	0.20	0.64	0.40
	Non-hazardous waste					
	Total non-hazardous waste	Tons	3,719.55	2,787.27	4,054.06	4,424.20
	Land-fill	Tons	3,411.55	2,558.27	2,380.00	4,411.20
	On-site storage		308.00	229.00	1,674.06	13.00

Notes: Waste data is from water production and water treatment plants at each WHA industrial estates. The waste includes water sludge, chemical containers, oil and grease stained cloth.

Energy

GRI Standard	Performance	Unit	2016	2017	2018	2019
302-1	Energy consumption from non-renewable sources					
	Diesel generator	KWh	41,603.87	31,638.76	44,164.35	32,967.27
	Grid electricity consumption	KWh	20,663,679.15	20,413,719.44	25,354,446.78	27,022,963.95
	Energy consumption from renewable source					
	Solar power	KWh	NA	NA	NA	180,365.05

GHG Emissions

GRI Standard	Performance	Unit	2016	2017	2018	2019
305-1	Scope 1 emissions					
	Total scope 1 emissions	Metric tons CO2e	112.66	85.68	119.60	89.27
305-2	Scope 2 emissions					
	Total scope 2 emissions	Metric tons CO2e	12,028.33	11,882.83	14,758.82	15,730.07

Notes: Scope 1 emissions data are from diesel used in power generator and company's vehicles.

Scope 2 emissions data are from electricity used in water production and wastewater treatment plants.

Water

GRI Standard	Performance	Unit	2016	2017	2018	2019
303-3	Water withdrawal					
	Total water withdrawn from surface water sources	MI	6,189.241	7,397.59	7,369.51	3,811.91
	Total water withdrawn from third party water supplier	MI	55,344.97	58,865.15	57,574.43	63,531.73
303-4	Water discharge by destination					
	Water discharged to surface water	MI	28,812.88	30,872.90	47,185.82	44,292.55
	Water discharge to seawater	MI	1,683.02	1,847.24	1,768.44	1,870.21
	Water discharged by category					
	Freshwater ($\leq 1,000$ mg/L Total Dissolved Solids)	MI	28,812.88	30,872.90	47,185.82	44,292.55
	Other water ($> 1,000$ mg/L Total Dissolved Solids)	MI	1,683.02	1,847.24	1,768.44	1,870.21

Effluent

GRI Standard	Performance	Unit	Standard	2016	2017	2018	2019
306-1	Water discharge by quality and location*						
	WHA CIE1						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	8.00	12.00	13.00	11.00
	Chemical Oxygen Demand (COD)	≤120	mg/L	33.00	42.00	44.00	44.00
	Suspended Solid (SS)	≤50	mg/L	16.00	17.00	16.00	12.00
	WHA CIE2						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	NA	6.00	3.00	5.00
	Chemical Oxygen Demand (COD)	≤120	mg/L	NA	26.00	27.00	51.00
	Suspended Solid (SS)	≤50	mg/L	NA	13.00	11.00	12.00
	ESIE Phase 1						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	6	5	6	3
	Chemical Oxygen Demand (COD)	≤120	mg/L	33	38	49	44
	Suspended Solid (SS)	≤50	mg/L	16	20	12	10
	ESIE Phase 2B						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	10	7	7	5
	Chemical Oxygen Demand (COD)	≤120	mg/L	45	32	35	45
	Suspended Solid (SS)	≤50	mg/L	22	16	12	9
	WHA ESIE1 Phase1						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	8.58	10	11	10.16
	Chemical Oxygen Demand (COD)	≤120	mg/L	34.58	30.33	40.75	50.26
	Suspended Solid (SS)	≤50	mg/L	14.58	16.58	10.9	17.16
	WHA ESIE1 Phase3						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	7.25	7.4	8.4	8.08
	Chemical Oxygen Demand (COD)	≤120	mg/L	40.33	36.08	39.25	49.17
	Suspended Solid (SS)	≤50	mg/L	19.60	14.27	10.83	8.7
	WHA ESIE2						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	NA	11	8	5
	Chemical Oxygen Demand (COD)	≤120	mg/L	NA	64	31	52
	Suspended Solid (SS)	≤50	mg/L	NA	56	15	17
	WHA ESIE4						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	NA	NA	NA	4-13
	Chemical Oxygen Demand (COD)	≤120	mg/L	NA	NA	NA	19-64
	Suspended Solid (SS)	≤50	mg/L	NA	NA	NA	6-50

GRI Standard	Performance	Unit	Standard	2016	2017	2018	2019
306-1	WHA EIE						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	4	3	6	2
	Chemical Oxygen Demand (COD)	≤120	mg/L	38	33	45	49
	Suspended Solid (SS)	≤50	mg/L	21	17	26	22
	WHA RIL						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	6	9	12	8
	Chemical Oxygen Demand (COD)	≤120	mg/L	33	33	36	49
	Suspended Solid (SS)	≤50	mg/L	16	9	11	10
	WHA SIL						
	Biochemical Oxygen Demand (BOD)	≤20	mg/L	3	6	4	3
	Chemical Oxygen Demand (COD)	≤120	mg/L	42	54	45	41
	Suspended Solid (SS)	≤50	mg/L	13	19	13	11

* Remark: WHA Utility and Power is responsible for water discharge quality of all WHA industrial estates therefore the data is reported by industrial estate location.

NA= Not applicable as the operation did not commenced during the reporting year

Environmental Compliance

GRI Standard	Performance	Unit	2016	2017	2018	2019
307-1	Non-compliance with environmental laws and regulations					
	Number of environmental non-compliance case	case	0	0	0	0
	Total amount of fines for environmental non-compliance	Baht	NA	NA	NA	NA

GRI Content Index



General Disclosures

	Disclosure	Chapter	Page
102-1	Name of the Organization	About this report	5
102-2	Activities, brands, products, and services	About WHAUP	6-14
102-3	Location of Headquarters	About WHAUP	15
102-4	Location of operations	About WHAUP	15-16
102-5	Ownership and legal form	About WHAUP	17
102-6	Markets served	About WHAUP	8-16
102-7	Scale of the organization	About WHAUP	17
102-8	Information on employees and other workers	Performance summary	88
102-9	Supply Chain	About WHAUP	14, 36
102-11	Precautionary Principles or approach	Environmental and Impact Management	71-72, 77
102-12	External initiatives	Membership	4, 29
102-13	Membership of associations	Membership	4, 29
102-14	Statement from senior decision-maker	CEO message	2-3
102-15	Key impacts, risks, and opportunities	Risk and Crisis Management	34
102-16	Values, principles, standards, and norms of behavior	About WHAUP Code of Business Conduct Human Resource Management	7, 30, 56
102-18	Governance Structure	About WHAUP	18
102-30	Effectiveness of risk management processes	Risk and Crisis Management	32
102-32	Highest Governance Body's Role in Sustainability Reporting	Materiality	23
102-40	List of stakeholder groups	Stakeholders	19
102-41	Collective bargaining agreements	Human Resource Management	59
102-42	Identifying and selecting stakeholders	Stakeholders	19
102-43	Approach to stakeholder engagement	Stakeholders	20-22
102-44	Key topics and concerns raised	Stakeholder Engagement	20-22
102-45	Entities included in the consolidated financial statements	About WHAUP	17
102-46	Defining report content and topic boundaries	About this report	5
102-47	List of material topics	Materiality	24
102-50	Reporting period	About this report	5

Disclosure		Chapter	Page
102-51	Date of most recent report	About this report	5
102-52	Reporting cycle	About this report	5
102-53	Contact point for questions regarding the report	About this report	5
102-54	Claims of reporting in accordance with the GRI Standards	About this report	5
102-55	GRI content Index	GRI Content Index	94-100
102-56	External Assurance	About this report	5

Material Topics

GRI Standards	Disclosure	Chapter	Page/Website
Economic Performance			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	About WHAUP	8-17
	103-2 The management approach and its components	About WHAUP	8-17
	103-3 Evaluation of the management approach	About WHAUP	87
GRI 201 Economic Performance 2016	201-1 Direct Economic value generated and distributed	- About WHAUP - Performance summary	8-17, 87 For detailed information please see 2019 annual report: https://investor.wha-up.com/misc/flipbook/index.html?id=129462
Indirect Economic Impact			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	- Community Development - Water Management	63, 78
	103-2 The management approach and its components	- Community Development - Water Management	63, 80-81
	103-3 Evaluation of the management approach	- Community Development - Water Management	63-64, 81
GRI 203 Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	- Community Development - Water Management	63-64, 80-81
Procurement Practices			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Supply Chain Management	36
	103-2 The management approach and its components	Supply Chain Management	36-38
	103-3 Evaluation of the management approach	Supply Chain Management	36-38

GRI Standards	Disclosure	Chapter	Page/Website
GRI 204 Procurement Practices 2016	204-1 Proportion of spending on local suppliers	Supply Chain Management	38
GRI 414 Supplier Social Assessment 2016	414-1 New suppliers that were screened using social criteria	Supply Chain Management	38
	414-2 Negative social impacts in the supply chain and actions taken	Occupational Health and Safety	52
Anti-Corruption			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Code of Business Conduct	28, 30
	103-2 The management approach and its components	Code of Business Conduct	28-31
	103-3 Evaluation of the management approach	Code of Business Conduct	28, 30
GRI 205 Anti-corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	- Code of Business Conduct - Performance summary	28-31
	205-3 Confirmed incidents of corruption and actions taken	- Code of Business Conduct - Performance summary	28, 87
Materials			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Water Management	78
	103-2 The management approach and its components	Water Management	78-81
	103-3 Evaluation of the management approach	Water Management	78-81
GRI 301 Materials 2016	301-1 Materials used by weight or volume	- Performance summary	90
	301-2 Recycled input materials used	- Water Management - Performance summary	90
Energy			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Climate Change and Energy Management	82-83
	103-2 The management approach and its components	Climate Change and Energy Management	82-86
	103-3 Evaluation of the management approach	Climate Change and Energy Management	82-86
GRI 302 Energy 2016	302-1 Energy consumption within the organization	- Performance summary	90
	302-4 Reduction of energy consumption	Climate Change and Energy Management	83

GRI Standards	Disclosure	Chapter	Page/Website
Water and Effluents			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Water Management	78, 80
	103-2 The management approach and its components	Water Management	78-81
	103-3 Evaluation of the management approach	Water Management	78-81
GRI 303 Water and Effluents 2016	303-1 Interactions with water as a shared resource	Water Management	78-80
	303-2 Management of water discharge-related impacts	Water Management	80
	303-3 Water withdrawal	- Water Management - Performance summary	78-79, 91
	303-4 Water discharge	- Water Management - Performance summary	80, 91-93
Emissions			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Climate Change and Energy Management	82
	103-2 The management approach and its components	Climate Change and Energy Management	82-86
	103-3 Evaluation of the management approach	Climate Change and Energy Management	82-86
GRI 305 Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Performance summary	91
	305-2 Energy indirect (Scope 2) GHG emissions	Performance summary	91
	305-5 Reduction of GHG emissions	- Environmental Impact Management - Climate Change and Energy Management	73-74, 83-86
Effluents and Waste			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Environmental Management	72
	103-2 The management approach and its components	Environmental Management	72-75
	103-3 Evaluation of the management approach	Environmental Management	72-75
GRI 306 Effluents and Waste	306-1 Water discharge by quality and destination	- Water Management - Performance summary	92-93
	306-2 Waste by type and disposal methods	- Environmental Management - Performance summary	72-74, 90

GRI Standards	Disclosure	Chapter	Page/Website
Environmental Compliance			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Environmental Management	71-72, 77, 78
	103-2 The management approach and its components	Environmental Management	71-77
	103-3 Evaluation of the management approach	Environmental Management	72-73, 76-77
GRI 307 Environmental Compliance	307-1 Non-compliance with environmental laws and regulations	Performance summary	93
Supplier Environmental Assessment			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Supply Chain Management	36
	103-2 The management approach and its components	Supply Chain Management	36-38
	103-3 Evaluation of the management approach	Supply Chain Management	36-38
GRI 308 Supplier Environmental Assessment	308-1 New suppliers that were screened using environmental criteria	Supply Chain Management	38
Employment			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Human Resource Management	56
	103-2 The management approach and its components	Human Resource Management	57-61
	103-3 Evaluation of the management approach	Human Resource Management	57-61
GRI 401 Employment 2016	401-1 New employee hires and employee turnover	- Human Resource Management - Performance summary	58
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Human Resource Management	59
Occupational Health and Safety			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Occupational Health and Safety	50
	103-2 The management approach and its components	Occupational Health and Safety	50-55
	103-3 Evaluation of the management approach	Occupational Health and Safety	50-55

GRI Standards	Disclosure	Chapter	Page/Website
GRI 403 Occupational Health and Safety 2018	403-1 Occupational health and safety management systems	Occupational Health and Safety	51-55
	403-2 Hazard identification, risk assessments, and incident investigation	Occupational Health and Safety	50-52
	403-4 Worker participation, consultation, and communication on occupational health and safety	Occupational Health and Safety	53-55
	403-5 Worker training on occupational health and safety	Occupational Health and Safety	52-55
	403-6 Promotion of worker health	Occupational Health and Safety	54
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Occupational Health and Safety	52-55
	403-9 Work-related injuries	- Occupational Health and Safety - Performance summary	50, 89
Training and Education			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	- Innovation Management - Human Resource Management	44, 60
	103-2 The management approach and its components	- Innovation Management - Human Resource Management	44, 60
	103-3 Evaluation of the management approach	- Innovation Management - Human Resource Management	44, 60
GRI 404 Training and Education 2016	404-1 Average hours of training per year per employee	- Human Resource Management - Performance summary	60, 89
	404-2 Programs for upgrading employee skills and transition assistance programs	- Innovation Management - Human Resource Management	44, 60
	404-3 Percentage of employees receiving regular performance and career development reviews	Performance summary	89
Diversity and Equal Opportunity			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Human Resource Management	61
	103-2 The management approach and its components	Human Resource Management	61
	103-3 Evaluation of the management approach	Human Resource Management	61
GRI 405 Diversity and Equal Opportunity	GRI 405-1 Diversity of Governance bodies and employees	Performance summary	89

GRI Standards	Disclosure	Chapter	Page/Website
Local Communities			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Community Development	62
	103-2 The management approach and its components	Community Development	62-69
	103-3 Evaluation of the management approach	Community Development	62-69
GRI 413-1 Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	- Community Development - Performance summary	62-69, 89
Supplier Social Assessment			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Supply Chain Management	36
	103-2 The management approach and its components	Supply Chain Management	36-38
	103-3 Evaluation of the management approach	Supply Chain Management	36-38
GRI 414 Supplier Social Assessment 2016	414- 1 New suppliers that were screened using social criteria	Supply Chain Management	38
	414-2 Negative social impacts in the supply chain and actions taken	Occupational Health and Safety	52
Innovation			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Innovation Management	39
	103-2 The management approach and its components	Innovation Management	39-44
	103-3 Evaluation of the management approach	Innovation Management	39-44
Customer Relationship			
GRI 103 Management Approach 2016	103-1 Explanation of the material topic and its boundary	Customer Relationship Management	45
	103-2 The management approach and its components	Customer Relationship Management	45-48
	103-3 Evaluation of the management approach	Customer Relationship Management	45-48



WHA UTILITIES & POWER PUBLIC COMPANY LIMITED.
HEAD OFFICE

24th Floor, UM Tower 9 Ramkhamhaeng Road,
Suanlaung, Bangkok 10250, Thailand
Tel : (662) 719-9559 Fax : (662) 717-2128



www.wha-up.com